Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide

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New and Changed Information

The *Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide* applies to the SFS 7012 Release 3.1 or later.

Table 1 lists the new and changed features available with each supported SFS 7012 release.

Table 1 Documented Features for the Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide

Feature	Description	Changed in Release	Where Documented
	Initial release of the *Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide*		

Table 1 Documented Features for the Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide (continued)

Feature	Description	Changed in Release	Where Documented
Redundant Management	Added redundant management information.	3.3	Installing the Spine and Leaf Modules, page 2-26 Updating Management Spine IP Addresses in a Redundant Management Configuration, page 2-31 Rebooting Multiple Managed Spines, page 2-38
Double Data Rate (DDR) capabilities	Added DDR information	3.4	Product Overview, page 1-1 Port Statistics Field Descriptions, page 3-68 CLI command ismPortSetSpeed in the section IbSwitchInfo, page 5-83 of Appendix B: Command Line Interface.

Preface

This preface describes the audience, organization, and conventions of the *Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide* . It also provides information on how to obtain related documentation.

Audience

The intended audience for this document are network administrators responsible for configuring and operating network equipment. It assumes a basic working knowledge of:

- Local Area Networks (LANs)
- Ethernet concepts
- Simple Network Management Protocol (SNMP)
- InfiniBand

Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	Product Overview	High-level information about the Cisco SFS 7012™
Chapter 2	Installation	Task-oriented information for installing the SFS 7012
Chapter 3	Operations and Administration	Task-oriented information for configuring and monitoring the SFS 7012
Appendix A	Technical Specifications	SFS 7012 technical specifications
Appendix B	Command Line Interface	Reference information for the SFS 7012 command line interface (CLI)
Appendix C	Troubleshooting	Troubleshooting symptoms and resolutions for the SFS 7012

Conventions

This document uses the following conventions for notes, cautions, and safety warnings.

Notes and Cautions contain important information that you should be aware of.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Caution Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement.

Warning **This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

Related Documentation

The documentation set for the SFS 7012 includes the following documents:

- *Regulatory Compliance and Safety Information for the Cisco SFS 7012 and SFS 7024*
- *Cisco SFS 7012 InfiniBand Server Switch Release Notes for Cisco Releases*
- *Cisco SFS 7012 InfiniBand Server Switch Hardware Users Guide*
- *Cisco SFS 7012 InfiniBand Server Switch Installation and Configuration Note*

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. This section explains the product documentation resources that Cisco offers.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/techsupport

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Product Documentation DVD

The Product Documentation DVD is a library of technical product documentation on a portable medium. The DVD enables you to access installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the HTML documentation and some of the PDF files found on the Cisco website at this URL:

http://www.cisco.com/univercd/home/home.htm

The Product Documentation DVD is created and released regularly. DVDs are available singly or by subscription. Registered Cisco.com users can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at the Product Documentation Store at this URL:

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http://tools.cisco.com/RPF/register/register.do

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Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to do the following:

- Report security vulnerabilities in Cisco products
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http://www.cisco.com/go/psirt

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

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- For emergencies only—security-alert@cisco.com

  An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For nonemergencies—psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

Tip We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.*x* through 9.*x*.

Never use a revoked encryption key or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

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http://tools.cisco.com/RPF/register/register.do

Note Use the **Cisco Product Identification Tool** to locate your product serial number before submitting a request for service online or by phone. You can access this tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link, clicking the **All Tools (A-Z)** tab, and then choosing **Cisco Product Identification Tool** from the alphabetical list. This tool offers three search options: by product ID or model name; by tree view; or, for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Tip Displaying and Searching on Cisco.com

If you suspect that the browser is not refreshing a web page, force the browser to update the web page by holding down the Ctrl key while pressing F5.

To find technical information, narrow your search to look in technical documentation, not the entire Cisco.com website. On the Cisco.com home page, click the **Advanced Search** link under the Search box and then click the **Technical Support & Documentation** radio button.

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Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests, or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411
Australia: 1 800 805 227
EMEA: +32 2 704 55 55
USA: 1 800 553 2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—An existing network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of the network is impaired while most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The Cisco Online Subscription Center is the website where you can sign up for a variety of Cisco e-mail newsletters and other communications. Create a profile and then select the subscriptions that you would like to receive. To visit the Cisco Online Subscription Center, go to this URL:

  http://www.cisco.com/offer/subscribe

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco channel product offerings. To order and find out more about the *Cisco Product Quick Reference Guide*, go to this URL:

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- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the *Internet Protocol Journal* at this URL:

  http://www.cisco.com/ipj

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

  http://www.cisco.com/en/US/products/index.html

- Networking Professionals Connection is an interactive website where networking professionals share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

  http://www.cisco.com/discuss/networking

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  http://www.cisco.com/univercd/cc/td/doc/abtunicd/136957.htm

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

Product Overview

The Cisco SFS 7012™ is an industry leading modular system used for creating large, single-system Grid/Cluster server fabrics, or as a building block for larger fabrics. The SFS 7012 is designed to maximize performance, streamline operations, and ensure uptime by providing full hardware and software reliability, availability, and serviceability (RAS) features.

Leveraging InfiniBand (IB) — an industry-standard interconnect — the SFS 7012 provides high performance, offering a full bisectional bandwidth (FBB) fabric (10Gb-30Gb) and ultra-low switching latency. Additionally, the SFS 7012 can be configured to run at 2.5 Gbps single data rate (SDR), 5.0 Gbps double data rate (DDR), or both.

All major SFS 7012 components and expansion modules are field replaceable and hot pluggable. To allow easy scaling, the SFS 7012 provides 12 expansion slots. Each slot can support expansion modules with twelve 10 Gbit/sec (or 4X) IB ports, meaning the SFS 7012 can scale to 144 (4X) InfiniBand ports. The SFS 7000 Series switches make possible the highest density of InfiniBand fabrics available today.

SFS 7012 Feature Set

Strategic Benefits

- Creates the industry's simplest way to build medium to large server fabrics
  - Modular systems up to 144 ports (4X)
- Eliminates requirement for parallel storage networks
- High-availability design for mission critical needs
- Lowers Total Cost of Ownership (TCO)

Key Design Features

- All field-replaceable units (FRU's) can be replaced while under power
- Redundant management, power and cooling
- High performance 10Gb/s
- Full Bisectional Bandwidth InfiniBand switching fabric
- Twelve (12) expansion slots for InfiniBand (4X)
- SDR and DDR support
- Embedded system management

SFS 7012 Product Specifications

Mechanical/Thermal/Power Specifications

- 7U - 19" rack mount environment
- Integrated thermal management
- Front-to-back airflow
- Hot plug, redundant cooling
- Hot plug, redundant power supplies
- 90/264 VAC operation
- 50/60 Hz Frequency
- Redundant, isolated AC inputs
- FCC and VCCI compliant
- U.L. Listed

Thermal Management Features

- Four (4) fan trays, hot plug, N+1 fans
- Two (2) fans per tray, 60mm, 12VDC
- Available air flow: 200 cfm @ .20 in H2O
- Expected air velocity on the switch chip: 400 lfpm
- Fan rotation monitor
- I2C interface to CME
- Thermal input from ambient air sensor and Switch chip via IBML links

Power Design Features

- Up to six (6), 350 Watt power supplies
- 3.30" Width x 10.67" Depth x 1U height
- 12V bulk power
- Status indicators
- Two (2) independent AC input lines

Switch Characteristics

- 7U form factor
- Full module enclosure
- Available power (all copper): 745 Watts max

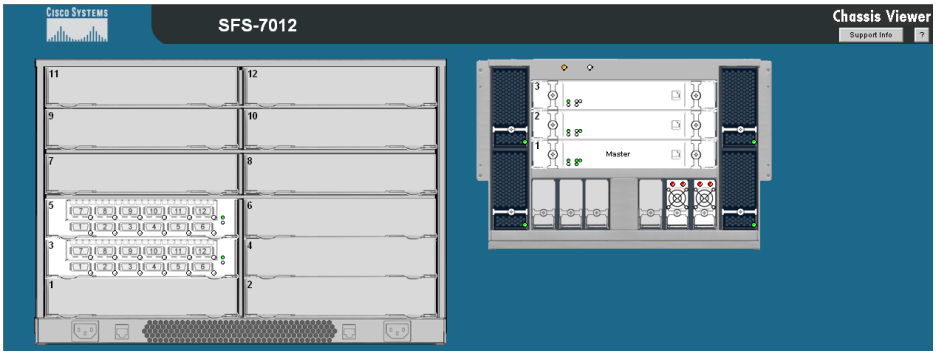
- Available power (all fiber): 879 Watts max
- Available air flow: 200 cfm
- Thermal status reporting to CME via IBML
- Up to one hundred forty-four (144) 4X IB external copper ports
- Two (2) RJ-45 connectors for 100BASE Ethernet connection to management LAN.
- One (1) RJ-11 serial port per spine module for configuration.

Chassis Viewer Software

The Chassis Viewer is Cisco"s browser-based management software. Primary functions of Chassis Viewer for the SFS 7012 switch and its associated components include:

- Management
- Configuration
- Monitoring
- Diagnostics

Figure 1-1 Chassis Viewer Home Page



- The Chassis Viewer runs on the Chassis Management Unit (CMU) processor of the SFS 7012 spine module(s), and is accessed through an OOB LAN workstation connected to the Ethernet port of the switches.

Chassis Viewer Functionality

For the SFS 7012, Chassis Viewer provides an interface for performing the following management, configuration, and monitoring tasks:

- Manage and view user-defined data
- Monitor component status
- Monitor Switch-level detailed information
- Configure the OOB LAN IP address
- Manage and monitor log files, including:
  - Set debug levels determining the amount of information to be logged
  - Reset the logs

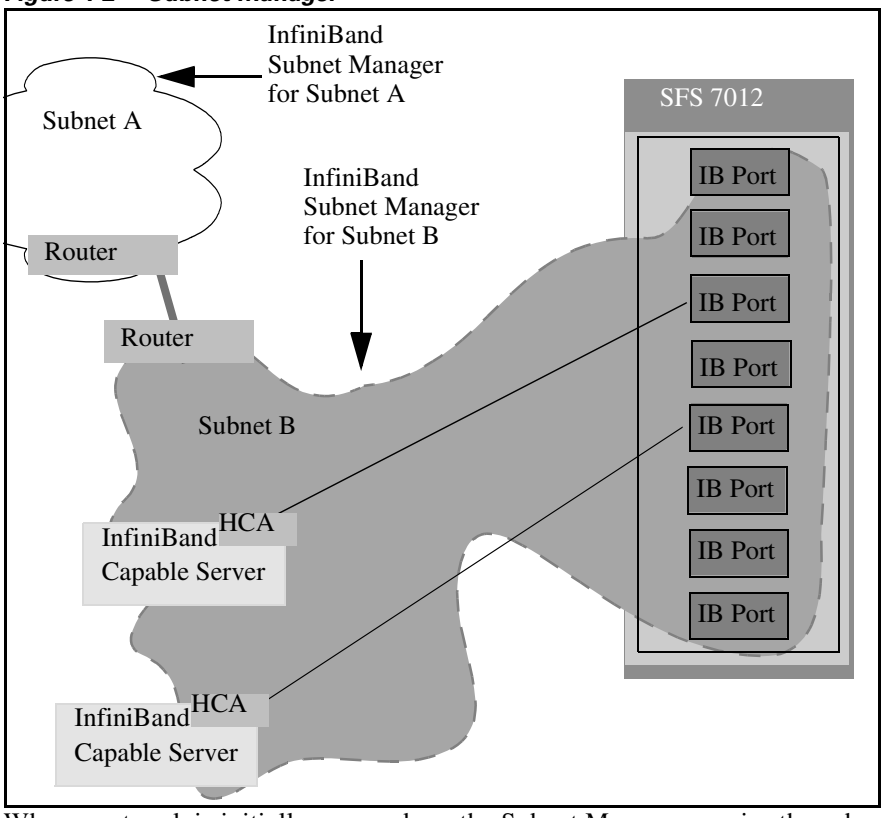
- Perform maintenance tasks
- Manage firmware updates, including uploading new firmware and setting the active version.

Subnet Manager

Every InfiniBand fabric subnet requires a single *active* Subnet Manager (SM) to initialize and maintain the subnet. The fabric may also have one or more *standby* Subnet Managers. One of the standby Subnet Managers can be configured to become the active SM in the event of a failure.

As Figure 1-2 shows, InfiniBand-enabled fabrics consist of one or more subnets. Each subnet consists of a number of InfiniBand-capable servers connected to target devices. InfiniBand-capable routers provide connectivity between InfiniBand subnets.

Figure 1-2 Subnet Manager



When a network is initially powered up, the Subnet Manager queries the subnet management agents running on the network devices, for information about node/port addressing schemes, routing tables and partitions. From that point on, the Subnet Manager periodically sweeps the network for changes. Once the InfiniBand network is up and running, the InfiniBand General Services Managers (GSMs) begin to interface with General Services Agents (GSAs).

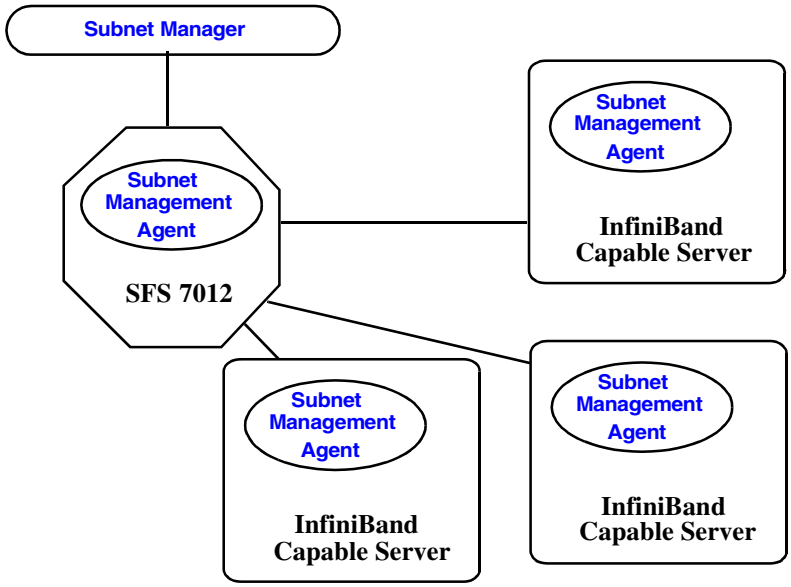
Subnet Management

Subnet Management Agents

A Subnet Management Agent processes management requests from the Subnet Manager. Subnet Management Agents are implemented on all nodes within the InfiniBand fabric. These nodes include IB-capable switches, routers, and channel adapters. Each node implements a Subnet Management Agent. Within the SFS 7012 Switch, a Subnet Management Agent (SMA) is implemented within its firmware.

An SMA also runs on every InfiniBand-capable server that is equipped with an HCA. As shown in Figure 1-3 the Subnet Manager interacts with these SMAs to discover information about the nodes on the fabric.

Figure 1-3 InfiniBand Managers and Agents



The Subnet Manager utilizes the agent information to discover and manage connections from the SFS 7012 to the InfiniBand fabric. The Subnet Manager maintains a database tracking subnet topology information as a result of its interaction with the SMAs.

InfiniBand General Services Managers and Agents

The InfiniBand specification defines the InfiniBand General Services Managers and their associated agents. General Services Managers exchange messages with agents to manage and monitor the performance and the physical environment of devices on the network.

Once the InfiniBand network is up and running, the InfiniBand General Services Managers begin to interface with General Services Agents. The General Services Managers and Agents include:

- **Subnet Administration (SA)**

  SA provides InfiniBand fabric nodes with an interface to the Subnet Manager. This interface is used by the nodes on the fabric to interact with the Master Subnet Manager and to discover information about the fabric. Every InfiniBand fabric subnet requires a SA.

- **The Device Manager (DM) and Device Management Agent (DMA)**

  The DM and DMA discover and manage the association between hosts and devices behind the Target Channel Adapters.

- **The Communications Manager (CM)**

  The CM establishes and manages communication channels between nodes.

- **The Baseboard Manager (BM) and Baseboard Management Agent (BMA)**

  The BM and BMA exchange messages relating to items such as temperature monitoring and hardware control to manage hardware on the fabric.

- **The Performance Manager (PM) and Performance Management Agent (PMA)**

The PM and PMA exchange messages about performance statistics and error information of InfiniBand devices on the fabric.

SNMP Support

Built-in support for Simple Network Management Protocol (SNMP) allows users to integrate a SFS 7012 into their existing management frameworks. SNMP allows users access to all statistics, trend analysis, alarm handling, filtering, and performance monitoring capabilities supported by these management frameworks.

SNMP MIBs

SNMP Management Information Bases (MIBs) are management elements that are used by industry frameworks to monitor information about the SFS 7012 switch. The SFS 7012 switch supports MIBs from the following sources:

- Switch-sourced MIBs: MIBs from the CMU of the SFS 7012 provide status information regarding the physical environment of the switch. Additionally, the CMU MIBs provide status and activity information for all line cards residing in the switch.

Installation

This chapter describes how to install the Cisco SFS 7012™ and its components, and it includes the following information:

- Planning the Installation, page 2-15
- Installation Tasks, page 2-22
- Hot Swapping Components, page 2-39

Note Before you install, operate, or service the system, read the *Regulatory Compliance and Safety Information for the Cisco SFS 7012 and 7024* for important safety information.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.** Statement 1022

Statement 1019—Main Disconnecting Device

Warning **The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.** Statement 1019

Waarschuwing **De combinatie van de stekker en het elektrisch contactpunt moet te allen tijde toegankelijk zijn omdat deze het hoofdmechanisme vormt voor verbreking van de aansluiting.**

Varoitus **Pistoke/liitinkohta toimii pääkatkaisumekanismina. Pääsy siihen on pidettävä aina esteettömänä.**

Attention **La combinaison de prise de courant doit être accessible à tout moment parce qu'elle fait office de système principal de déconnexion.**

Warnung **Der Netzkabelanschluß am Gerät muß jederzeit zugänglich sein, weil er als primäre Ausschaltvorrichtung dient.**

Avvertenza **Il gruppo spina-presa deve essere sempre accessibile, poiché viene utilizzato come dispositivo di scollegamento principale.**

Advarsel **Kombinasjonen støpsel/uttak må alltid være tilgjengelig ettersom den fungerer som hovedfrakoplingsenhet.**

Aviso **A combinação ficha-tomada deverá ser sempre acessível, porque funciona como interruptor principal.**

¡Advertencia! **El conjunto de clavija y toma ha de encontrarse siempre accesible ya que hace las veces de dispositivo de desconexión principal.**

Varning! **Man måste alltid kunna komma åt stickproppen i uttaget, eftersom denna koppling utgör den huvudsakliga frånkopplingsanordningen.**

Figyelem **A dugaszolóaljzat és a dugasz együttesének mindig hozzáférhetőnek kell lennie, mivel ez szolgál főmegszakítóként.**

Предупреждение Штепсельная розетка всегда должна быть доступна, поскольку она служит основным устройством отключения.

警告 插销和插座必须便于随时插拔，因为它是主要断电设备。

警告 主要な切断装置となるので、プラグとソケットは常に手が届く場所に置く必要があります。

Statement 1045—Short-circuit Protection

Warning **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

Waarschuwing **Voor dit product moet kortsluitbeveiliging (overstroombeveiliging) deel uitmaken van de installatie in het gebouw. De installatie moet voldoen aan de nationale en lokale bedradingvoorschriften.**

Varoitus **Tämä tuote vaatii suojauksen oikosulkuja (ylivirtaa) vastaan osana asennusta rakennukseen. Asenna ainoastaan kansallisten ja paikallisten johdotussäännösten mukaisesti.**

Attention **La protection de ce produit contre les courts-circuits (surtensions) doit être assurée par la configuration électrique du bâtiment. Vérifiez que l'installation a lieu uniquement en conformité avec les normes de câblage en vigueur au niveau national et local.**

Warnung **Für dieses Produkt ist eine Kurzschlußsicherung (Überstromsicherung) erforderlich, die als Teil der Gebäudeinstallation zur Verfügung gestellt wird. Die Installation sollte nur in Übereinstimmung mit den nationalen und regionalen Vorschriften zur Verkabelung erfolgen.**

Avvertenza **Questo prodotto richiede una protezione contro i cortocircuiti, da fornirsi come parte integrante delle dotazioni presenti nell'edificio. Effettuare l'installazione rispettando le Norme CEI pertinenti.**

Advarsel **Dette produktet krever beskyttelse mot kortslutninger (overspenninger) som en del av installasjonen. Bare installer utstyret i henhold til nasjonale og lokale krav til ledningsnett.**

Aviso **Este produto requer proteção contra curto-circuitos (sobreintensidade de corrente), que deve estar instalada nos edifícios. Instale apenas de acordo com as normas de instalação elétrica nacionais e locais.**

Advertencia **Este producto necesita estar conectado a la protección frente a cortacircuitos (sobretensiones) que exista en el edificio. Instálelo únicamente en conformidad con las regulaciones sobre cableado, tanto locales como nacionales, a las que se tenga que atener.**

Varning! **Denna produkt kräver att kortslutningsskydd (överström) tillhandahålles som en del av byggnadsinstallationen. Installera bara i enlighet med nationella och lokala kabeldragningsbestämmelser.**

Figyelem **A termékhez kötelező rövidzárlat (túláram) elleni védelmet használni, amelyet az épület kábelezésének részeként kell biztosítani. Csak az országos és helyi kábelezési előírásoknak megfelelően helyezhető üzembe.**

Предупреждение Для этого устройства необходима защита от короткого замыкания (перегрузки), являющаяся частью электропроводки здания. При установке устройства необходимо соблюдать региональные и местные требования к электрооборудованию.

警告 此产品需要短路（过载电流）保护，这种保护要由建筑物内的供电电路提供。安装时必须遵守国家和当地有关布线的规章。

警告 この製品は、設置する建物にショート(過電流)保護機構が備わっていることを前提に設計されています。電気配線に関する一般規定および地域の規定に従って設置してください。

주의 이 제품은 단락(과전류) 보호가 필요하며, 이는 건물 설치의 일부로 제공됩니다. 국가 및 해당 지역 배선 규정에 따라 설치하십시오.

Aviso **Este produto requer uma proteção contra curto-circuito (sobrecorrente) que deve fazer parte da instalação do edifício. Faça a instalação somente de acordo com as regulamentações de cabeamento nacionais e locais.**

Advarsel **Dette produkt kræver beskyttelse mod kortslutning (overstrøm). Dette skal være en del elinstallationen i bygningen. Installation skal ske i overensstemmelse med nationale og lokale ledningsregler.**

تحذير **يجب وجود حماية من الدوائر الكهربائية القصير كجزء من تركيب الجهاز. قم بالتركيب طبقاً للتشريعات السلكية المحلية.**

Upozorenje **Za ovaj je proizvod potrebna zaštita od prekomjerne količine struje (kratkoga spoja), koja mora biti ugrađena kao dio električnoga strujnog kruga. Zaštitu ugradite samo u skladu s važećim zakonima i propisima o ožičenju.**

Upozornění **Upozornění: Tento výrobek vyžaduje ochranu proti zkratu (nadproudu), která je součástí instalace budovy. Instalaci provádějte pouze v souladu s platnými předpisy pro elektroinstalaci.**

Προειδοποίηση Αυτό το προϊόν απαιτεί στην κτιριακή εγκατάσταση να περιλαμβάνεται προστασία από βραχυκύκλωμα (υπέρ-ένταση). Η τοποθέτηση να γίνεται μόνο σύμφωνα με τους εθνικούς και τοπικούς κανονισμούς για την καλωδίωση.

אזהרה למוצר זה נדרשת הגנה מפני קצר (זרם-יתר), המסופקת כחלק ממערך ההתקנה. יש להתקין רק בהתאם להנחיות החיווט הנהוגות המדינה וההנחיות המקומיות.

Opomena За производот треба да се обезбеди заштита од краток спој (преголем напон) што е вградена во инсталацијата на зградата. Местете ја инсталацијата само во согласност со националните и помесните прописи за електрично ожичување.

Ostrzeżenie **To urządzenie wymaga zastosowania zabezpieczenia przeciwzwarciowego (nadprądowego) jako elementu instalacji elektrycznej budynku. Należy je instalować zgodnie z krajowymi i lokalnymi przepisami dotyczącymi instalacji elektrycznych.**

Upozornenie **Upozornenie Tento výrobok vyžaduje ochranu proti krátkemu spojeniu (nadprúdu), ktorá je súčasťou inštalácie budovy. Inštaláciu uskutočňujte iba v súlade s platnými predpismi pre elektroinštaláciu.**

Statement 1074—Comply with Local and National Electrical Codes

Warning **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Waarschuwing **Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.**

Varoitus **Laitteisto tulee asentaa paikallisten ja kansallisten sähkömääräysten mukaisesti.**

Attention **L'équipement doit être installé conformément aux normes électriques nationales et locales.**

Warnung **Die Installation der Geräte muss den Sicherheitsstandards entsprechen.**

Avvertenza **L'installazione dell'impianto deve essere conforme ai codici elettrici locali e nazionali.**

Advarsel **Installasjon av utstyret må samsvare med lokale og nasjonale elektrisitetsforskrifter.**

Aviso **A instalação do equipamento tem de estar em conformidade com os códigos eléctricos locais e nacionais.**

¡Advertencia! **La instalación del equipo debe cumplir con las normativas de electricidad locales y nacionales.**

Varning! **Installation av utrustningen måste ske i enlighet med gällande elinstallationsföreskrifter.**

Figyelem **A berendezés üzembe helyezését a helyi és a nemzeti elektromossági előírások figyelembevételével kell elvégezni.**

Предупреждение **Установка оборудования должна соответствовать местным и национальным электротехническим нормам.**

警告 设备安装必须符合本地与本国电气法规。

警告 機器の取り付けは地域および国内の電気工事規定に遵守する必要があります。

Statement 1075—Hazardous Voltage or Energy Present on DC Power Terminals

Warning **Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.** Statement 1075

Waarschuwing **Op DC-aansluitingspunten kunnen zich gevaarlijke voltages of energieën voordoen. Plaats altijd de afsluiting wanneer de aansluitingspunten niet worden gebruikt Zorg ervoor dat blootliggende contactpunten niet toegankelijk zijn wanneer de afsluiting is geplaatst.**

Varoitus **Tasavirtaliittimissä saattaa olla huomattava jännite tai teho. Sulje suojus aina, kun liittimet eivät ole käytössä. Suojuksen ollessa suljettuna varmista, että kohde on suojattu eristämättömiltä johtimilta.**

Attention **Le voltage ou l'énergie électrique des terminaux à courant continu peuvent être dangereux. Veillez à toujours replacer le couvercle lors les terminaux ne sont pas en service. Assurez-vous que les conducteurs non isolés ne sont pas accessibles lorsque le couvercle est en place.**

Warnung **In mit Gleichstrom betriebenen Terminals kann es zu gefählicher Spannung kommen. Die Terminals müssen abgedeckt werden, wenn sie nicht in Betrieb sind. Stellen Sie bei Benutzung der Abdeckung sicher, dass alle nicht isolierten, stromführenden Kabel abgedeckt sind.**

Avvertenza **I terminali di alimentazione DC potrebbero contenere voltaggio o energia pericolosi. Accertarsi di sostituire il coperchio ogni qualvolta i terminali non sono operativi. Accertarsi che i conduttori scoperti non siano accessibili quando il coperchio è inserito.**

Advarsel **Det kan forekomme farlig spenning eller energi i likestrømsterminaler. Sett alltid dekselet på plass når terminalene ikke er i bruk. Kontroller at uisolerte ledere ikke er tilgjengelige når dekselet er på plass.**

Aviso **Os terminais de corrente contínua podem fornecer tensão ou energia perigosa. Volte a colocar a tampa, sempre que os terminais não estiverem a ser utilizados. Certifique-se de que os condutores sem isolamento não estão acessíveis, quando a tampa estiver colocada.**

¡Advertencia! **Puede haber energía o voltaje peligrosos en los terminales eléctricos de CC. Reemplace siempre la cubierta cuando no estén utilizándose los terminales. Asegúrese de que no haya acceso a conductores descubiertos cuando la cubierta esté colocada.**

Varning! **Farlig spänning eller skadlig energi kan finnas i likströmsterminalerna. Sätt alltid tillbaka höljet när terminalerna inte används. Försäkra att inga oisolerade ledare kan nås när höljet sitter på plats.**

Figyelem **Az egyenáramú csatlakozókon veszélyes feszültség vagy energia léphet fel. Ha a csatlakozók nincsenek bekötve, feltétlenül tegye vissza a fedelet. Ügyeljen rá, hogy a szigeteletlen vezetékeket ne lehessen megérinteni, ha a fedél fel van szerelve.**

Предупреждение **На контактах питания постоянного тока может присутствовать опасное напряжение или энергия. Всегда устанавливайте крышку на место после завершения обслуживания. Когда крышка установлена, все неизолированные проводники должны быть недоступны.**

警告 直流电源终端可能产生危险的电压或能量。终端不使用时，务必将机盖盖上。确认机盖盖上时，无法使用不绝缘导体。

警告 直流電力端子に危険な電圧やエネルギーが発生している可能性があります。使用していない端子には常にカバーを付けてください。カバーが付いているときは非絶縁形コンダクタに接触できないことを確認してください。

Planning the Installation

Environmental Requirements

To assure proper operation and avoid unnecessary maintenance, the installation site must conform to certain environmental specifications.

Figure 2-1 Environmental Requirements

Ambient operating temperature	50° - 104°F (5° - 40°C)
Non-operating temperature	-35°C to 65°C
Airflow requirements	Air flows into the switch from front to back. Cabinet doors must not impede the front-to-back air flow. Power supplies use the air inside the chassis and exhaust out the front of the chassis.
Humidity	5% to 85% relative humidity (noncondensing).

Rack Specifications and Recommendations

The SFS 7012 switch is designed to be installed in an existing 19-inch equipment rack or server rack.

The SFS 7012 switch is designed for a four-post server cabinet. *It is not designed for a two-post telco cabinet.*

Racks should conform to conventional standards. In the United States, use American National Standards Institute (ANSI)/Electronic Industries Association (EIA) standard ANSI/EIA-310-D-92, and International Electrotechnical Commission (IEC) 297

- Racks should meet the following mechanical recommendations:
  - Four-post, 19" rack to facilitate easy maintenance
  - Universal mounting rail hole pattern identified in IEC Standard 297
  - Mounting holes flush with the rails to accommodate the switch
- Use a rack grounding kit and a ground conductor that is carried back to earth or to another suitable building ground. Ground the equipment rack to earth ground.
- Provide enough room to work on the equipment. Clear the work site of any unnecessary materials. Make sure the equipment will have enough clearance for front and rear access.

Installing and Routing Cable

Note Building and electrical codes vary depending on the location. Comply with all code specifications when planning the site and installing cable.

When running cables to the equipment, consider the following:

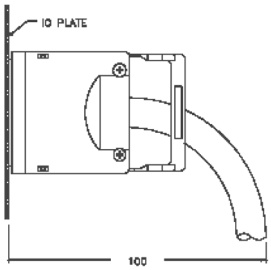
- Do not run cables where they can be stepped on or rolled over.
- Be sure cables are intact with no cuts, bends, or nicks.
- Provide proper strain relief for standard IB cables by adhering to the following guidelines:

Figure 2-2 Cable Bend Radii

Assembly 90-Degree Bend Radii	
American Wire Gauge (AWG) Size Cable	4X Bend Radius
24	5.20 inches
26	4.80 inches
28	4.70 inches

- Temporary 90-degree bend can never be more than 0.5 inches tighter than the values listed above for any assembly.
- This is the absolute minimum sustained bend radius for each 4X cable AWG size. This measurement is the distance from the panel to the point where the cable makes a 90-degree bend. In other words, this number includes the 2" connector stand-off from the panel surface.

Figure 2-3 Bend Radius Measurement Diagram



- Support cable using a cable manager mounted above connectors to avoid unnecessary weight on the cable bundles.
- Bundle cables using velcro straps to avoid damaging cables.
- Keep all ports and connectors free of dust.
- Unshielded Twisted Pair (UTP) cables can build up Electrostatic Discharge (ESD) charges when being pulled into a new installation. Before installing category 5 UTP cables, discharge ESD from the cable by plugging it into a port on a system that is not powered on.
- When required for safety and fire rating requirements, plenum-rated cable can be used. Check the local building codes to determine when it is appropriate to use plenum-rated cable, or refer to IEC standard 850.

Power Requirements

Power Supply

- The switch power supplies have a maximum power consumption requirement of 350W. Also ensure that the site meets all power supply requirements.
- Before installation and periodically after installation, check that the site is receiving clean power. Install a power conditioner if necessary.
- Be sure the site is properly grounded to avoid damage from lightning and power surges.

Uninterruptible Power Supply

Consider the following when selecting Uninterruptible Power Supply (UPS) equipment:

- The minimum amperage requirements for a UPS:
  - Calculate VA (Volt-Amps): Locate the voltage and amperage requirements for each piece of equipment (usually located on a sticker on the back or bottom of the equipment). Multiply the numbers together to get VA.
  - Add the VA from each piece of equipment together to find the total VA requirement. Then add 30% to determine the minimum amperage requirements for the UPS.
- Transition time (the time necessary for the UPS to transfer from utility power to full-load battery power).
- The longest potential time period the UPS might be required to supply backup power.
- Whether or not the UPS unit also provides online protection.

Installation Tasks Checklist

To perform the actual switch installation, the site implementation engineer must perform the following tasks, which are detailed in this section.

Caution Be sure to review the Safety Information on page 18 *before* starting the installation and *during* the installation process.

Step 1 Check the installation site to verify the installation of cabinet power feeds, rails, and grounding.

Step 2 Unpack the equipment and inspect for any shipping damage. Any shipping damage should be reported to the shipping company.

Step 3 Verify that the equipment serial numbers match those on the packing slip.

Step 4 Mark the rack and install the mounting rails.

Step 5 Physically install the switch in the rack.

Step 6 Install IB cables between the SFS 7012 and other IB-enabled network devices.

Step 7 Install intra-cabinet power and grounding cables for the switch.

Step 8 Power up the switch.

Step 9 Verify the default system IP address (192.168.100.9)

Step 10 Add the equipment to the network.

Safety Information

The following safety guidelines are provided to ensure both personal safety for the user and to protect the system from potential damage. These precautions cover the following categories:

- Precautions for Rack-Mountable Products
- Protecting Against Electrostatic Discharge
- Electrical Safety Precautions

Precautions fit into one of three categories:

Note A textual callout designed to emphasize:

  - Tasks of particular importance.
  - Tips and reminders to maximize the use of the equipment.

Caution Potential for damage to system equipment. Damage to the system caused by the user may have potential warranty implications.

Warning **Potential for personal injury.**

Precautions for Rack-Mountable Products

Warning **Installing system components in a rack without the front and side stabilizers installed could cause the rack to tip over. Therefore, always install the stabilizers before installing components in the rack.**

Warning **After installing system components in a rack never pull more than one component at one time out of the rack on its slide assemblies. The weight of more than one extended component could cause the rack to tip over.**

Warning **Do not step on or stand on any component when servicing other components in a rack.**

Warning **The chassis, when fully populated with leaf modules, spine modules, power and fan supplies, is very heavy (approximately 100 lbs.). It is recommended that a lifting device be used to handle a fully loaded chassis.**

Caution Always load the rack from the bottom up, loading the heaviest item first.

Caution Make sure the rack is level and stable before extending any component from the rack.

Note Ensure that proper airflow is provided to components of the rack.

Protecting Against Electrostatic Discharge

Caution Use a grounded wrist strap designed to prevent static discharge.

Caution Static electricity can harm delicate components inside the system. To prevent ESD damage, users need discharge any static electricity from their bodies before touching any electronic components. Touching an unpainted metal surface will discharge static electricity.

Caution When transporting an ESD sensitive component, first place it in an antistatic container or packaging.

Electrical Safety Precautions

Warning **Do not work alone when working with high voltage components.**

Warning **This unit may have more than one power cord. To reduce the risk of electrical shock, disconnect both cords before servicing the unit.**

Warning **To avoid potential electrical shock, operate this unit only when the cover is in place.**

Warning **To avoid potential electrical shock, use only a grounded (three wire) electrical outlet.**

Warning **Keep objects that might damage this unit and liquids that might spill clear from this unit. Liquids and foreign objects that come into contact with voltage points could create the risk of fire or electrical shock.**

Caution Do not overload the power supply branch circuit providing power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.

Caution Keep power cord and connection cables clear of obstructions that might cause damage.

Caution Do not attempt to service the unit yourself. The first course of action is to contact Technical Support.

Note Unplug this unit from the electrical outlet and refer servicing to a qualified service center if any of the following conditions occur:

- The power cord is damaged or frayed.
- The unit has been dropped or the case has been damaged.
- The unit has been exposed to any liquids.
- The unit does not operate normally when all operating instructions have been followed.
- The unit exhibits a distinct change in performance, indicating a need for service.

Tools and Equipment Required

- An ESD wrist strap
- A #2 Phillips screwdriver
- Pen (felt-tip) to mark the mounting holes

Check the Installation Site

The SFS 7012 switch is designed to be installed in an existing server cabinet (not a telco cabinet), where it can be mounted in a standard equipment rack. Mounting brackets are integrated with the switch.

Be sure of the following:

- The cabinet has a full earth ground to provide reliable grounding.
- There is enough room to work on the equipment.
- The equipment will have enough clearance for front and rear access.
- The IB cables can be accessed easily.
- Water or moisture cannot enter the switch.
- The ambient temperature stays between 50° - 104°F (5° - 40° C).
- Cabinet doors do not interfere with front-to-back air flow.

The cabinet should have its own power distribution (with switch). If the switch has two power supplies, it is suggested that a cabinet with dual power distribution units is used.

It is recommended that cabinet anti-tip devices are used. This is especially true if installing or removing an SFS 7012 switch in the upper half of the cabinet when the lower half is empty.

Unpack the Equipment

Warning **Read all installation instructions before connecting the system to its power source.**

Step 1 Carefully open the box and unpack the SFS 7012 switch. The SFS 7012 is shipped fully populated and should contain.

- SFS 7012 Chassis
- Leaf modules (up to 12)
- Leaf module blanks (up to 11). These blanks populate unused leaf module slots to help maintain the thermal integrity of the chassis.
- Spine modules (up to 3)
- Spine module blanks (up to 2). These blanks populate unused spine module slots to help maintain the thermal integrity of the chassis.
- Power Supplies: up to six (6)
- Power supply blanks (up to 5). These blanks populate unused power supply slots to help maintain the thermal integrity of the chassis.
- Fans (4)
- Mounting hardware kits

Step 2 Inspect the equipment for any shipping damage and report any problems to the shipping company.

Step 3 Verify that the equipment serial numbers match those on the packing slip.

Step 4 Resolve any issues with incorrect serial numbers or missing/incorrect parts ***before*** installing the equipment.

Installation Tasks

The following is an overview of the installation tasks detailed in this section:

Step 1 If applicable, remove the doors of the rack.

Step 2 Mark the rack, allowing 7 U (12.25 inches) of vertical space to install the SFS 7012 switch.

Step 3 Install the support rails.

Step 4 Rack mount the switch.

Step 5 If applicable, replace the rack's doors.

Mounting Kit

The mounting kit hardware contains all of the necessary parts for installing and mounting the SFS 7012 switch into a rack. These kits are intended for use in cabinets with a depth ranging from 28 - 34 inches.

Note If the rack is less than 28", or more than 34" deep, instead of using the rails, a support shelf able to support 100 lbs is required.

Mounting Hardware Kit Contents:

- **Kit Mounting Rails** containing:
  - One pair (left and right) of support rail assemblies
- **Kit Mounting Hardware 3/8" Square Hole** containing:
  - One pair of lower rear mounting brackets
  - Two heyclips
  - Eighteen 10/32" x 0.375" pan-head Phillips screws
  - Fourteen caged nut adapters for square-holed racks

Mark the Rack

Allow 7U (12.25 inches) of vertical space to install the SFS 7012 switch in the rack.

Step 1 Determine the location on the rack of the bottom of the switch.

Step 2 Mark the upper and lower mounting positions on the vertical rails on the front of the rack.

Step 3 Mark the upper and lower mounting positions on the vertical rails on the back of the rack.

Install the Rails in the Rack

Note The front flange (chassis fan side) of the rail has 3 holes. The back flange of the rail (chassis leaf module side) has two holes, which correspond to the bottom two holes on the front flange.

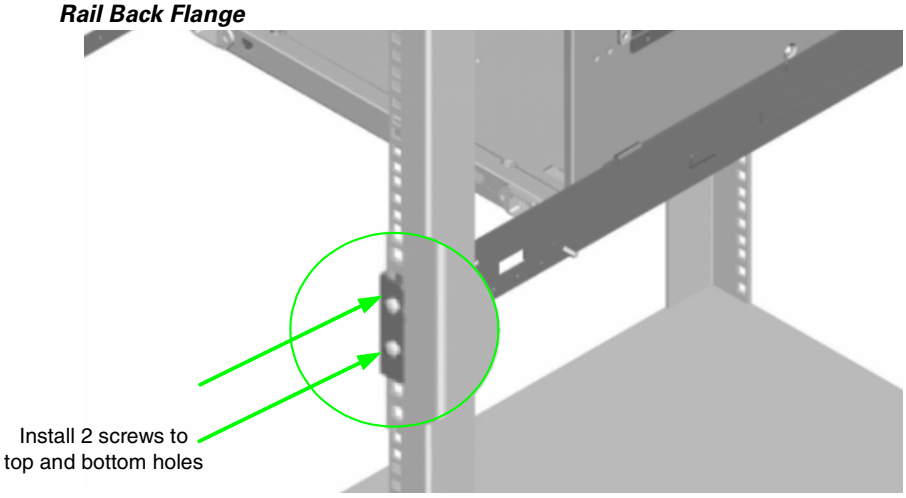
Step 1 Install the caged nuts into the 2 back holes (chassis leaf module side) and the top and bottom holes (chassis fan side) in the front of the rack.

Note The 2 front holes should match up with the *top and bottom* holes of the rail front flange.

All holes should correspond to the rail mounting positions (i.e., the holes marked with pen or tape).

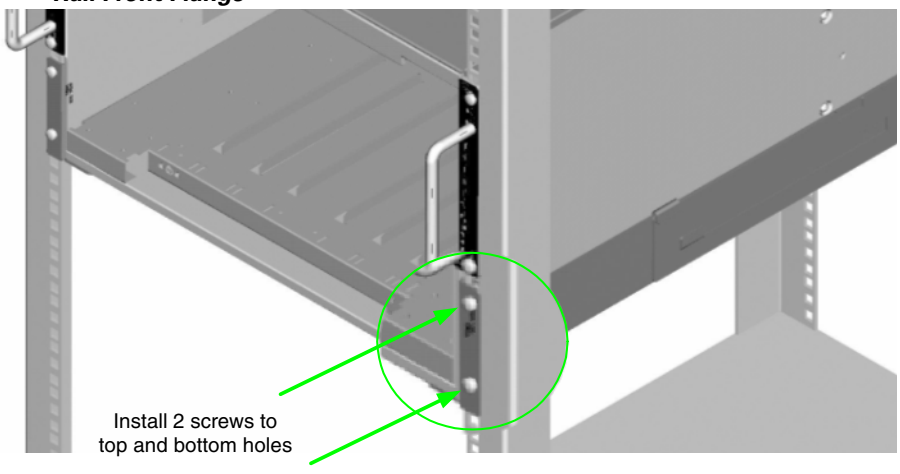
Step 2 Fasten the rail back flange (chassis leaf module side) to the rack by installing two screws into the rail and rack.

Figure 4 Rail Back Flange



Step 3 Fasten the rail front flange (chassis fan side) to the rack by installing one screw into the top hole of each rail.

Figure 5 Rail Front Flange



Install the second rail on the other side of the rack by repeating steps 1 through 3.

Rack-Mount the Switch

Caution Because of its size and weight, it is recommended that either a lifting device or three (3) people install the SFS 7012.

To install the switch into the rack, perform the following steps:

Step 1 Clear the area of any unnecessary materials.

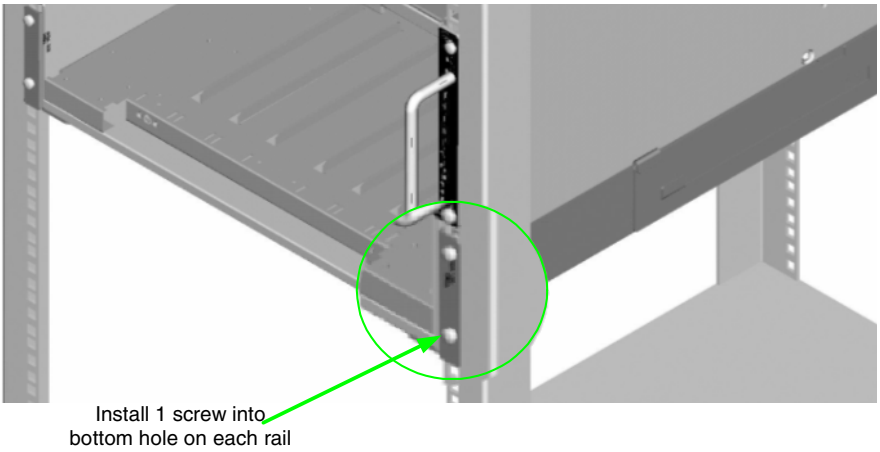
Step 2 Attach the clip of the ESD wristband (strap) to bare metal on the cabinet. Put the wristband around one wrist with the metal button against the skin.

Step 3 Lift the switch and, from the front of the cabinet, slide it onto the rails. The fans and power supplies are on the *front* of the chassis; leaf modules are to the *rear*.

Caution Never lift the switch with the handles on the spine modules, leaf modules, power supplies, and fan trays. These handles are not designed to support the weight of the SFS 7012.

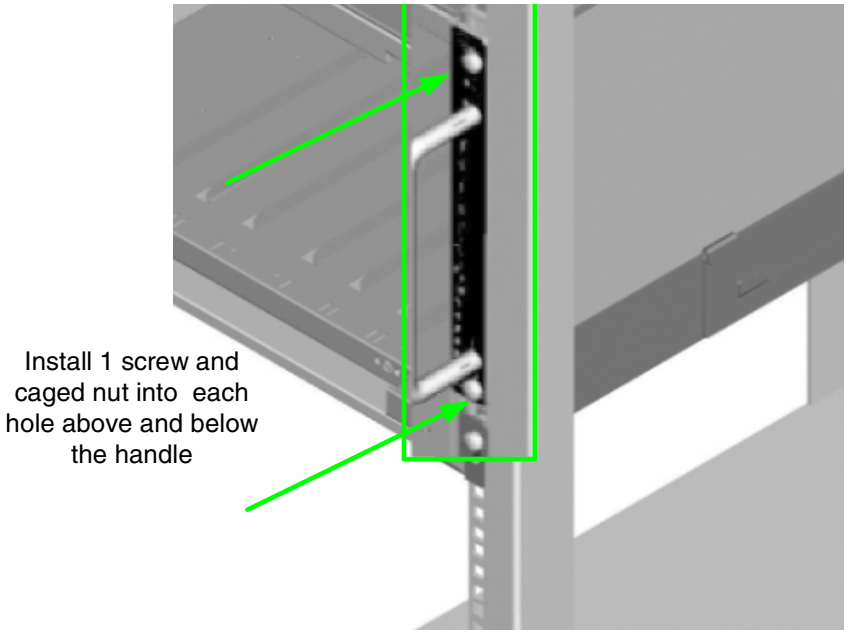
Step 4 Tighten the screw on the bottom of each side of the chassis into the corresponding bottom hole of the front flange of each rail.

Figure 6 Secure Chassis to Rail



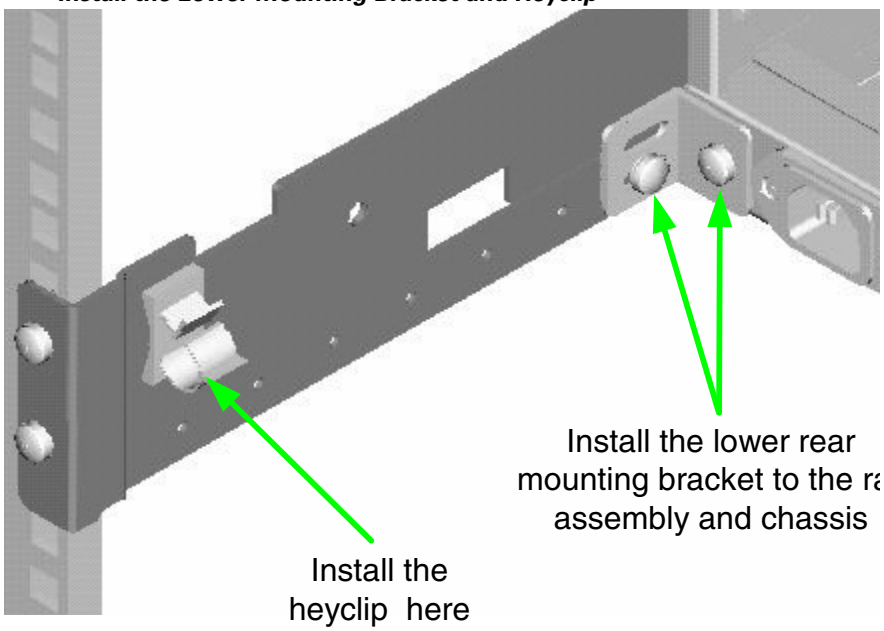
Step 5 On each side of the chassis, install a screw and caged nut into the holes above and below the handle.

Figure 7 Secure Chassis to Rack



Step 6 Using two screws, install the lower mounting bracket to the rail assembly and chassis as shown in Figure 8.

Figure 8 Install the Lower Mounting Bracket and Heyclip



Step 7 Install the heyclip to the rail assembly.

Step 8 If applicable, reinstall the chassis fascia(s).

Installing the Switch Face Plate

To install the switch face plate(s):

Step 1 On the switch fan side, insert the notches on the top of the fascia into the two slots on the chassis frame. Snap the bottom of the faceplate in place.

Removing a Module or Blank

The handles are self-locking. To unlock, push up on the handles to disengage from the lock notch. Then gently pull the handles out and slide the module out of the slot.

Note If removing, but not *replacing* a module, remember to replace with a module blank. All slots must be either populated with a module or have blanks for EMI and thermal integrity.

Installing the Spine and Leaf Modules

Note The purchased configuration for the SFS 7012 is shipped fully populated. Follow these steps when it becomes necessary to install or replace spine modules and leaf modules.

Step 1 Remove the necessary spine modules, spine module blanks, leaf modules, and leaf module blanks. For detailed instructions, please refer to the section Removing a Module or Blank, page 2-26.

Note If the user is only adding additional modules, remove only the blank(s) for the slot(s) to be populated. These will not be replaced.

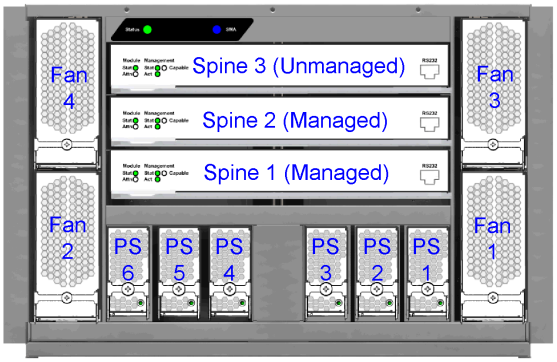
Step 1 When placing the spine modules and leaf modules into chassis slots, the following recommendations apply:

a. Spine Modules — It is recommended that the spine module(s) be installed into:

- Slot 1 for managed. For redundant management, populate slots 1 and 2 with management-capable spines.
- Slot 3 for unmanaged.

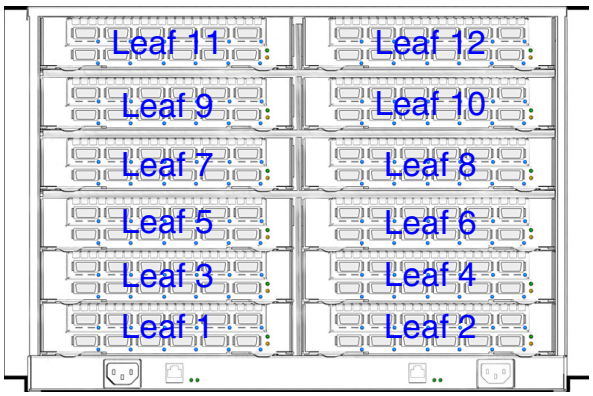
Refer to Figure 2-9 below:

Figure 2-9 SFS 7012 Chassis — Spine Module Slot Numbering



b. Leaf Modules— Leaf modules should be populated beginning with slot 1, then slot 2, then slots 3 through 12 respectively. Refer to Figure 2-10:

Figure 2-10 SFS 7012 Chassis — Leaf Module Slot Numbering



Step 2 To install a module or filler, hold it so that the ejector handles are on the bottom.

Step 3 Pull the handles out to extend them. Slide the module into the appropriate slot of the chassis until it makes contact with the backplane. As the module seats in the chassis, the handles will begin to close.

Step 4 Push the handles in to fully close.

Note Be sure that all cards are fully inserted in their respective chassis slots, and that the handles are in the locked position. This prevents accidental removal, provides proper grounding for the system, and helps to seat the bus connectors in the backplane receptacles.

Connect Equipment to the Ports and Power On the System

Note Before performing the tasks in this section, take a few minutes to review Figure 2-11 and Figure 2-12 below. It is important to understand the slot numbering for the leaf modules and spine modules (and the corresponding spine RJ-45 ports). It is also important to understand the slot numbering for the fans and power supplies (and the corresponding AC power inlets for the power supplies).

Figure 2-11 SFS 7012 Chassis Front View

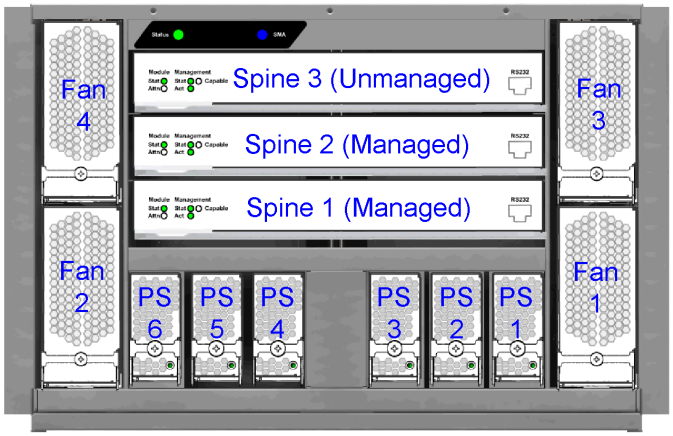
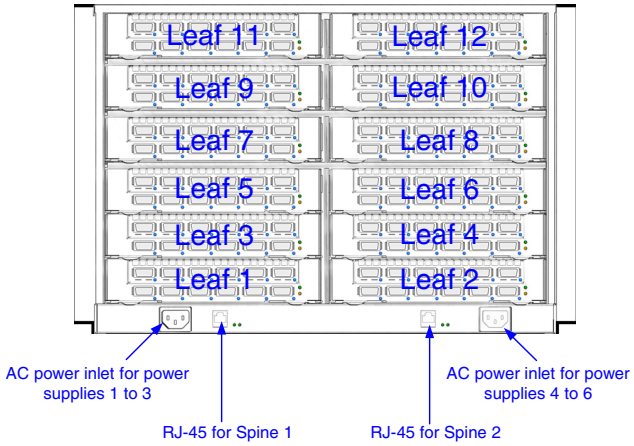


Figure 2-12 SFS 7012 Chassis Back View



Step 1 Connect a Category 5 or 6 (Cat 5/6) Ethernet cable to one of the RJ-45 connectors on the SFS 7012. Connect the other end of the Cat 5/6 to the OOB LAN workstation. Refer to Figure 2-12 for which RJ-45 connector(s) to use:

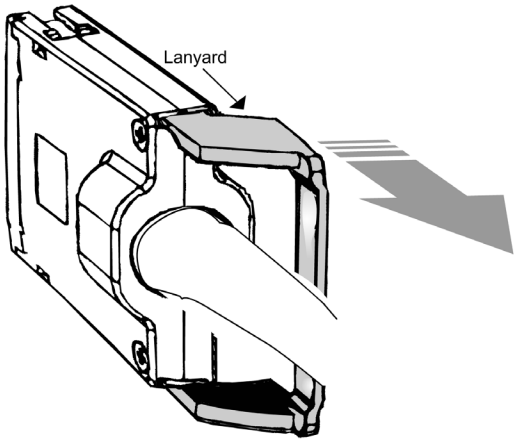
Step 2 Connect the switch to IB-enabled hosts using 4X-to-4X IB cables.

Note Make sure all cables latch securely into the corresponding port connectors. If the IB cable connector is not properly oriented to fit onto the port receptacle (i.e., while attempting to insert the cable in the port), *do not* twist the connector to achieve the correct orientation. Instead, reach back a few feet on the cable, and twist the bulk cable to allow the connector to rotate to the proper orientation. Doing this prevents all of the rotational forces from acting right at the connector terminations.

Caution It is important to provide strain relief for the IB cable connector.

Note When handling IB connectors, make certain to remove the connectors by pulling on the *center of the lanyard only* as shown in Figure 2-13 below. Pulling abruptly on the lanyard, or pulling on only one side of the lanyard will prevent the latch/unlatch operation from occurring, and could damage or break the lanyard.

Figure 2-13 4X IB Cable Connector



Connecting Power

Step 1 Provide strain relief for the power cable(s) by feeding them into the heyclips on the lower rail assemblies.

Note Be certain that the power cords are firmly seated into the SFS 7012 AC power inlets. Depending upon the purchased configuration, refer to Figure 2-12 for which AC power inlet to use.

Step 2 If necessary, replace the faceplates over the switch fans.

Step 3 Connect the power cables to an AC power outlet.

Step 4 When the SFS 7012 switch is plugged into an AC power outlet:

- **a.** The system powers up.
- **b.** The fans start.
- **c.** The system performs a power-on self test (POST).

Step 5 The switch, power supply, and fan LEDs light up.

Bringing Up the System For the First Time

Start-up Procedures

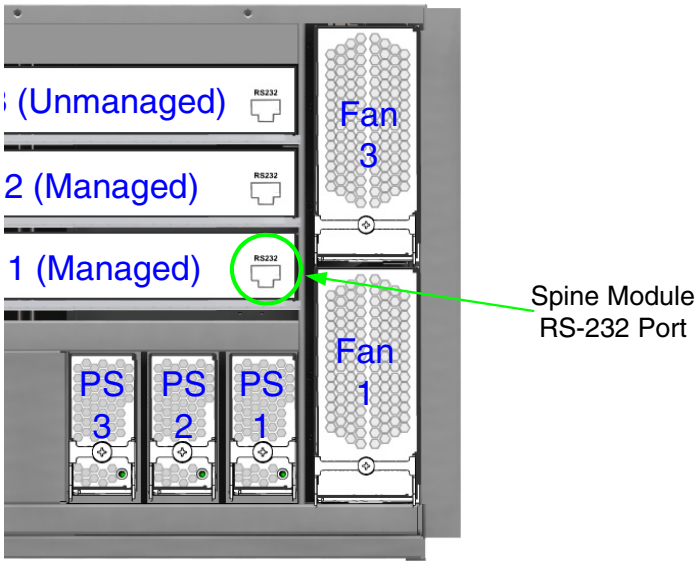
Step 1 Power up the SFS 7012.

Step 2 From its flash image on the CMU spine module, the switch begins its boot process.

Note If the spine module RS-232 port is connected to a terminal emulation program, the user will be able to view the switch boot process. Be certain to use a *null-modem/crossover* serial cable for the console port. The settings for the terminal emulation device should be:

- 8 data bits
- no parity bits
- 1 stop bit
- 56K baud
- Use VT100 emulation.
- Flow control = XON/XOFF

Figure 2-14 SFS 7012 RS-232 Connector



Step 3 Verify the IP address with the command line interface (CLI) command **`showChassisIpAddr`** command. The system returns the information similar to the following:

```
Chassis IP Address: 192.168.100.9 Net mask: 0xffffff00
```

Changing the SFS 7012 IP Address and Default Gateway via the CLI

The CLI can be accessed via Telnet, SSH, or through the SFS 7012 RS232 serial ports.

Step 1 Connect null-modem/crossover serial cables to the RS-232 ports of the SFS 7012. If using a terminal emulation device, the settings should be:

- 8 data bits
- no parity bits
- 1 stop bit
- 56K baud
- Use VT100 emulation.
- Flow control = XON/XOFF

Step 2 Power up the SFS 7012.

Note If using the RS-232 port, skip to **Step 6**. **Steps 3** through **5** are for those users accessing the SFS 7012 via Telnet or SSH.

Step 3 If using Telnet or SSH, access the SFS 7012 with the following command:

```
open 192.168.100.9
```

Step 4 The system prompts for a user name. In order to change the IP address and default gateway, the user must be logged in as the administrator. At the prompt enter:

```
admin
```

Step 5 The system prompts for a password. At the prompt enter:

```
adminpass
```

The system responds with:

```
Welcome to the SFS 7012 CLI. Type 'list' for the list of commands.
```

Step 6 To change the SFS 7012 default IP address enter:

```
setChassisIpAddr -h ipaddress -m netMask
```

where **-h ipaddress** is the new IP address in dotted decimal (i.e., xxx.xxx.xxx.xxx) format, and **-m netMask** is the new subnet mask in dotted decimal (i.e., xxx.xxx.xxx.xxx) format.

Step 7 To change the SFS 7012 default gateway IP address enter:

```
setDefaultRoute -h ipaddress
```

where **-h ipaddress** is the new default gateway IP address in dotted decimal (i.e., xxx.xxx.xxx.xxx) format.

Step 8 To to exit the CLI enter:

```
logout
```

Updating Management Spine IP Addresses in a Redundant Management Configuration

Note This procedure should be performed the first time the SFS 7012 is powered on. Additionally, it is recommended to change the managed spine IP address for all available images (i.e., Image 1 *and* Image 2) when performing this procedure.

Each managed spine must have a unique IP address that is different than the chassis IP address of the SFS 7012. Therefore, a redundantly-managed SFS 7012 will have three (3) unique IP addresses. The current default IP addresses are:

- Chassis: 192.168.0.9
- Spine 1: 192.168.0.10
- Spine 2: 192.168.0.11

It is necessary for each managed spine to have a unique IP address for the following reasons:

- Unique IP addresses are used when sending syslog messages from a managed spine to a syslog server.
- Gives the user the ability to ping each management spine separately.
- If the IP addresses are not unique, collisions will occur, causing IP operations to fail.

To update the IP address on managed spine, do the following:

Step 1 Ensure that the spine module is connected to a COM port on a serial terminal device via the RS-232 port.

Step 2 Get to a **[boot]:** prompt by following Step a or b.

a. If the managed spine is running, enter the following command at the console:

```
reboot
```

Then press **Enter**.

b. If the managed spine is not running, power on the switch.

Step 3 After selecting **image1** or **image2**, press the **Spacebar** to interrupt the auto load sequence before the counter expires (within 5 seconds).

Step 4 At the **[boot]:** prompt enter the new spine IP address with the following syntax:

```
spineip <NEW IP ADDRESS>
```

Then press **Enter**.

Step 5 At the **[boot]:** prompt, enter **reboot**, and press **Enter**. Upon reboot the managed spine will display information similar to the following:

```
Unified Boot Manager For The T3 Platform.
Image Date:  Jan 19 2006, 15:03:31
Checking L2 functionality...
BCM1125
L2 caches initialized and invalidated
CPU0 caches initialized
Initialized SMBUS Channels
SPD Checksum ok.
MEM_SEL = 0x00000007
CPU_REV = 0x00000001_112421FF
CPU speed = 400 MHz
IO Bridge 0,1 speed = 133, 200 MHz
Memory size = 128 MB
MC1 Configured for 128M SODIMM, CAS=2, 100 MHz
Configured Memory Size = 0x08000000
Channel Interleave Bit = 0
Number of Mem Channels = 1
Testing memory
Memory tests pass
CPU0 flushing caches
L2 flush complete
Start type = 0xBFC006A0
Jumping to romStart
Initializing HyperTransport bus
HyperTransport initialization completed
rintf MBOX connect interrupt_source=28 vector=62 status=0
Printf MBOX intEnable status=0
Found Intel Strata Flash 128 MBit (0x8918).
Mounted raw file system on device /image1. (size=6291456 bytes)
Mounted raw file system on device /image2. (size=6291456 bytes)
Mounted raw file system on device /dump0. (size=1048576 bytes)
Mounted flash file system on device /rfa1. (size=2097152 bytes)

Unified Boot Manager
[1] image1
[2] image2

CPU: Broadcom BCM1125
VxWorks Version: 5.4

[boot]:

Unified Boot Manager For The T3 Platform.
```

```
Image Date:  Jan 19 2006, 15:03:31
Checking L2 functionality...
BCM1125
L2 caches initialized and invalidated
CPU0 caches initialized
Initialized SMBUS Channels
SPD Checksum ok.
MEM_SEL = 0x00000007
CPU_REV = 0x00000001_112421FF
CPU speed = 400 MHz
IO Bridge 0,1 speed = 133, 200 MHz
Memory size = 128 MB
MC1 Configured for 128M SODIMM, CAS=2, 100 MHz
Configured Memory Size = 0x08000000
Channel Interleave Bit = 0
Number of Mem Channels = 1
Testing memory
Memory tests pass
CPU0 flushing caches
L2 flush complete
Start type = 0xBFC006A0
Jumping to romStart
Initializing HyperTransport bus
HyperTransport initialization completed
rintf MBOX connect interrupt_source=28 vector=62 status=0
Printf MBOX intEnable status=0
Found Intel Strata Flash 128 MBit (0x8918).
Mounted raw file system on device /image1. (size=6291456 bytes)
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Mounted raw file system on device /dump0. (size=1048576 bytes)
Mounted flash file system on device /rfa1. (size=2097152 bytes)

Unified Boot Manager
[1] image1
[2] image2

CPU: Broadcom BCM1125
VxWorks Version: 5.4

boot device          : icspkg0
processor number     : 0
host name            : home
file name            : /image1
inet on ethernet (e) : <NEW IP ADDRESS>
inet on backplane (b):
host inet (h)        : 192.168.100.1
gateway inet (g)     :
user (u)             : ftp
ftp password (pw) (blank = use rsh): ftp
flags (f)            : 0x0
target name (tn)     :
startup script (s)   :
other (o)            : sbe

Loading package from flash device /image1 ...
Boot System             = 7012
Boot Image Information:
  Product               = SFS7012
  BSP                   = t3
  Version               = 3.3.0.0.4
  Compressed Image Size = 3616523 bytes
  md5                   = 46086777be1b5bae45140a440425b915
  vxWorks Image Type    = loadable
  Computed md5          = 46086777be1b5bae45140a440425b915
```

```
  md5 values match!
11088736
Starting at 0x80010000...

sysI
REGS
BOOT
Initializing HyperTransport bus
HyperTransport initialization completed
Found Intel Strata Flash 128 MBit (0x8918).
Mounted raw file system on device /image1. (size=6291456 bytes)
Mounted raw file system on device /image2. (size=6291456 bytes)
Mounted raw file system on device /dump0. (size=1048576 bytes)
Mounted flash file system on device /rfa1. (size=2097152 bytes)
Network configuration requested.
cliEnabled=1

sbe0 speed=100 fullDuplex=0 flowControl=0
sbe1 speed=100 fullDuplex=1 flowControl=0
```

Note The command **spineip** changes the IP address for **image1** and **image2**,

Verifying Start-up

The following are ways to determine that the system has started successfully:

- The IB link status indicator LEDs are lit up on the switch ports which are connected to an IB host.
- The user is able to bring up the Chassis Viewer through a web browser on the OOB LAN. The home page displays the front and back views of the SFS 7012 switch.

SFS 7012 Component LEDs

Chassis Status LED

The chassis status LED is **Green** when the system is functioning normally.

The chassis status LED is **Amber** when one of the following conditions exists:

- The system ambient temperature exceeds 52 C but remains less than 60 C.
- Any Fan Alarm is amber.
- Any power supply AC OK LED is off.
- Any power supply DC OK LED is off
- Any spine module Attention LED is on, or it has been determined that a spine is not functioning (even if it is unable to light the LED).
- Any leaf module Attention LED is on, or it has been determined that a leaf is not functioning (even if it is unable to light the LED).

The chassis status LED is **Red** when the system can no longer function properly and indicates one of the following conditions:

- The system ambient temperature exceeded 60 degrees C.
- No functional fan trays are present.
- No functional spines are present.
- No functional leaves are present.

The chassis status LED is **off** when:

- There are no functional power supplies present.
- There are no management cards in the system
- AC power has been removed from the system.

Subnet Manager Agent (SMA) LED

There is a single SMA LED associated with the system. This LED is Blue if any external InfiniBand links have been established. If no external IB links have been established, the LED if **off**.

RJ45 LEDs

The SFS 7012 RJ45 connector has two LEDs, **Act** and **100**. The **100** LED is **Green** when a 100Mbps link is connected. The **Act** LED is **Green** when an Ethernet link has been established, and blinking when the link is active.

Fan LEDs

Fan LEDs indicate the following status(es):

- **Green** indicates that the fan is functioning properly.
- **Amber** indicates that the following warning condition exists:
- A single fan rotation failure at less than 4000 RPM or greater than 10950 RPM.
- **Red** indicates a possible problem, including:
  - The fan tray is not responding to commands for configuration and temperature-related operations.
  - A fan is not responding to commands for temperature and speed related operations.
  - The fan speed has fallen below the minimum allowed RPM for a fan.

Power Supply LEDs

Each SFS 7012 power supply has two LEDs: DC OK and AC OK. Following are the statuses for each.

DC OK

- **Green** indicates that DC power is normal.
- **Off** indicates a DC power failure or no DC power is present.

AC OK

- **Amber** indicates that AC power is normal.
- **Off** indicates a AC power failure or no AC power is present.

SFS 7012 Leaf and Spine Module LEDs

Leaf Module IB Port LEDs

Each SFS 7012 leaf module port has a **Blue** IB link status LED that provide the following indications:

- **On** - the logical link is up (port is in the Active state).
- **Slow Blink** - the physical link is up (port is in the Initialization state).

- **Fast Blink** - IB data is flowing through the port.
- **Off** - the physical link is down (port is in the Down state).

Spine and Leaf Module Status LED

The status LED indicates one of the following conditions:

- Steady **Green** - the module is operating normally.
- Blinking **Green** (twice per second) - transitional to the removal state.
- Blinking **Green** (once every four seconds) - LED test state.
- **Off** - module is in the removable state.

Spine and Leaf Module Attention LED

The Attention LED indicates one of the following conditions:

- **Off** - the system functioning normally.
- Steady **Amber** - the system requires some attention, which could indicate one of the following conditions:
  - The switch temperature is at a warning level on the module.
  - The switch silicon temperature is at a warning level (approximately 90 degrees C).
  - DC voltages on the board are slightly out of tolerance (12V Bulk, 5V, 3.3V, 1.8V, VBIO are all monitored).
  - The module can no longer function properly. The system will take the appropriate actions to ensure that no damage is done to its components.
- Blinking **Amber** (once every four seconds) - LED test state.

Spine Module Management LEDs

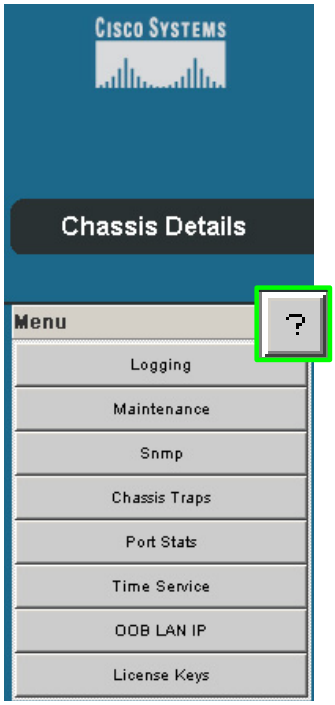
Each SFS 7012 spine module has three management LEDs:

- Capable:
  - **Green** indicates that the spine slot supports management.
  - **Off** indicates that the spine slot does not support management.
- Stat:
  - **Green** indicates that a management board is present.
  - **Off** indicates that no management board is present.
- Act:
  - **Green** indicates that management board is in the active mode.
  - **Off** indicates that the management board is in the standby mode (if the STAT LED is **Green**).
- DDR:
  - **Green** indicates that the switch is capable of running at DDR speeds.
  - **Off** indicates that the switch is not capable of running at DDR speeds (i.e., SDR only).

Accessing On-line Help

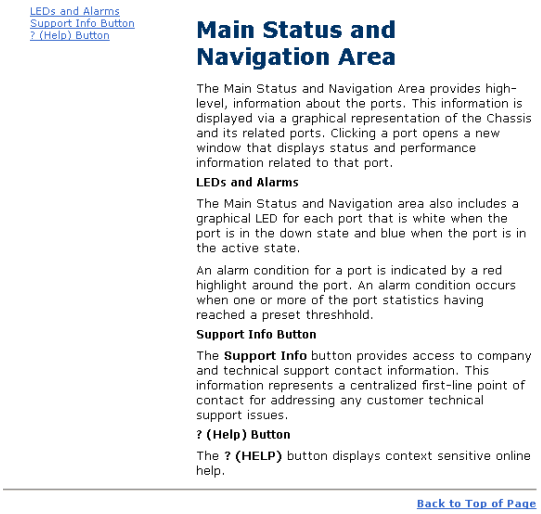
Online help can be accessed from anywhere within the Chassis Viewer by clicking on the **?** buttons as shown in Figure 2-15:

Figure 2-15 Chassis Viewer Online Help Button(s)



The on-line help screens contain topical information with textual references to more detailed information within the documentation. A sample on-line help screen is shown in Figure 2-16:

Figure 2-16 Sample Chassis Viewer On-line Help Screen



Shutdown Procedures

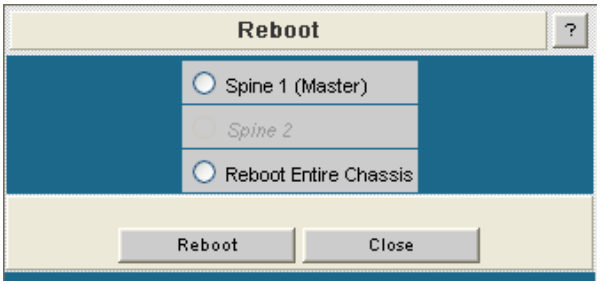
In order to shutdown the SFS 7012:

Step 1 Power down the switch by removing the power cords from the AC power inlets.

Rebooting Components from Chassis Viewer

Step 1 From the **Chassis Details** header, click **Reboot**. A screen similar to the following is displayed.

Figure 2-17 Reboot Screen



Step 2 Select the radio button of the spine(s) to be rebooted, or select the **Reboot Entire Chassis** radio button to reboot the SFS 7012 chassis and all spines.

Step 3 Click **Reboot**.

Rebooting Multiple Managed Spines

In a redundant management configuration it may occasionally be necessary for the user to reboot both managed spines. This is accomplished through the CLI of the master spine.

Step 1 Access the master spine CLI via Telnet, SSH, or through the SFS 7012 RS232 serial ports.

Step 2 The system prompts for a user name. At the prompt enter:

```
admin
```

Step 3 The system prompts for a password. At the prompt enter:

```
adminpass
```

The system responds with:

```
Welcome to the SFS 7012 CLI. Type 'list' for the list of commands.
```

Step 4 To reboot multiple spines on the SFS 7012 enter the following command:

```
reboot now -m -n
```

where:

- **now** initiates the reboot process as soon as the user presses **Enter** (i.e., no system **y/n** prompt).
- **-m** reboots just the management card of the master spine. This is a non-disruptive reboot (i.e., the reboot will not interfere with any switch traffic).
- **-n** reboots just the management card of the slave spine (in a non-disruptive manner).

Note If accessing the CLI through Telnet or SSH, the user will need to reconnect to the CLI following the reboot.

Hot Swapping Components

Hot Swapping Spine and Leaf Modules

Note Following are the general guidelines for hot swapping leaf and spine modules:

Caution Be certain that the managed spine to be hot swapped is a that same firmware level as all other components in the SFS 7012. A hot swap of a managed spine with another firmware level will cause a disruptive reboot (i.e., I/O traffic is interrupted).

- Hot swap one module at a time, allowing the chassis to completely update it before hot-swapping the next module. The module update is complete when it becomes visible within the Chassis Viewer GUI. Listed below are the approximate times to fully update each module type:
  - Spines modules: up to 4 minutes
  - Leaf modules: up to 2 minutes
- When a management spine is hot swapped, the rest of the chassis will continue to move packets without interruption.
- There is no need to reboot the chassis when replacing either a spine or leaf module.

Step 1 Remove the module by pushing up on the handles to disengage from the lock notch. Once the handles are disengaged, gently pull the handles out and slide the module out of the slot.

Step 2 To install a module, hold it so that the ejector handles are on the bottom.

Step 3 Pull the handles out to extend them. Slide the module into the appropriate slot of the chassis until it makes contact with the backplane. As the module seats in the chassis, the handles will begin to close.

Step 4 Push the handles in to fully close.

Hot Swapping the Fan Unit

Step 1 Loosen the captive panel screw.

Step 2 Pull the panel screw down to partially disengage the unit.

Step 3 Slowly pull the unit. The unit will disengage from the connector.

Step 4 Carefully slide the fan out until it is completely removed from its slot.

To install a fan unit:

Step 1 Place the unit into the slot. Slowly slide the fan unit in until it engages into the connector.

Step 2 Using the panel screw, push up to re-engage the unit.

Step 3 Tighten the captive panel screw.

Hot Swapping Power Supplies

The SFS 7012 switch requires a minimum of three power supplies for normal operation. Power supplies can be hot swapped without powering down the switch. To replace a power supply:

Step 1 Loosen the captive panel screw.

Step 2 Pull the panel screw down to partially disengage the unit.

Step 3 Slowly pull the unit. The unit will disengage from the connector.

Step 4 Carefully slide the power supply out until it is completely removed from its slot.

Step 5 To install a power supply:

Step 6 Place the unit into the slot. Slowly slide the power supply in until it engages into the connector.

Step 7 Using the panel screw, push up to re-engage the unit.

Step 8 Tighten the captive panel screw.

Operations and Administration

This chapter describes how to administer and configure the Cisco SFS 7012™ and its components, and it includes the following information:

- Logging, page 3-53
- Firmware Update, page 3-58
- SNMP, page 3-59
- Chassis Traps, page 3-64
- SFS 7012 Port Statistics, page 3-67

Chassis Viewer

The Chassis Viewer is Cisco's browser-based management software. The Chassis Viewer provides the primary management interface for the SFS 7012 switch, allowing the user to perform management, configuration, and monitoring tasks related to InfiniBand networks.

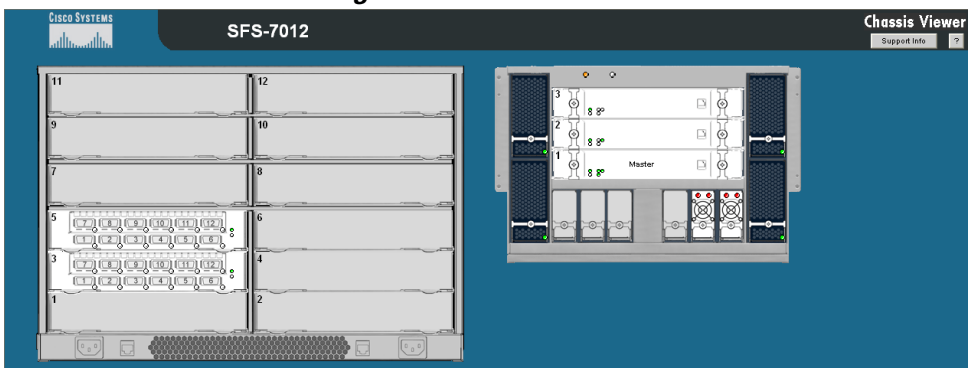
- The Chassis Viewer runs on the Chassis Management Unit (CMU) of the SFS 7012 managed spine modules.
- The browser must be on a workstation which has connectivity to the RJ-45 OOB LAN port on the switch.
- Management Workstation Requirements
  - Browser Level: Internet Explorer 5.5+ or Mozilla 1.6.x+
- To access the Chassis Viewer, point a browser to the IP address of the SFS 7012.

The Chassis Viewer Manages

- The SFS 7012 chassis.
- Each SFS 7012 leaf module.
- Each SFS 7012 spine module.
- Logging and monitoring functionality.

Home Page

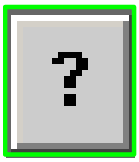
Figure 3-1 Chassis Viewer Home Page



The Chassis Viewer**'s** home page provides a high-level overview of the SFS 7012 switch and individual leaf and spine modules. This area is the starting point to more detailed information for the SFS 7012 chassis and components (fans and power supplies), leaf modules, and spine modules. The selected component provides hyperlinks to related menus and information where the user can perform configuration and monitoring tasks.

? (Help) Button

Figure 3-2 Help Button



The **? (HELP)** button displays online help. Each help screen gives the user a high-level, topic-specific description.

Support Button

Figure 3-3 Support Button

The Support button displays key contact information for support, displayed in the following window:

Figure 3-4 Support Contact Screen

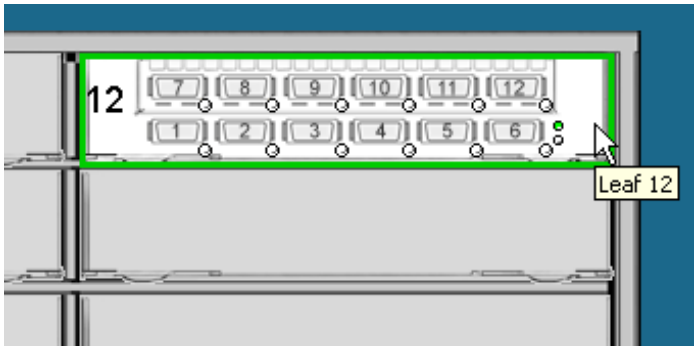
Displaying the Leaf and Spine Module Views

Leaf Module View

To display the leaf module view for the SFS 7012:

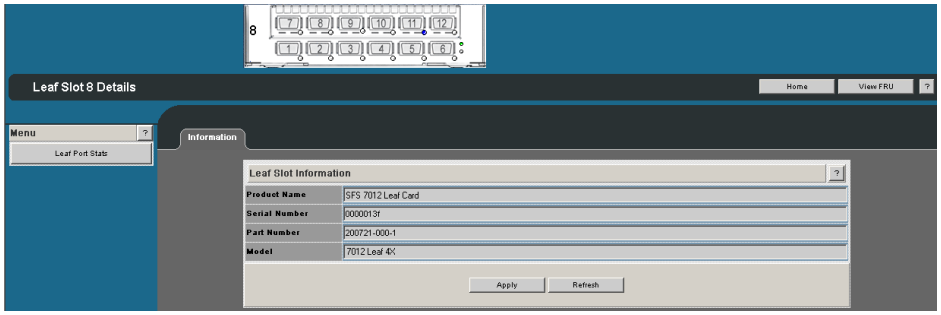
Step 1 Mouse over the leaf module to display. The edges of the leaf module are highlighted green as shown in Figure 3-5 below:

Figure 3-5 Leaf Module Mouseover



Left click the mouse. The leaf module view will be displayed.

Figure 3-6 Leaf Module View

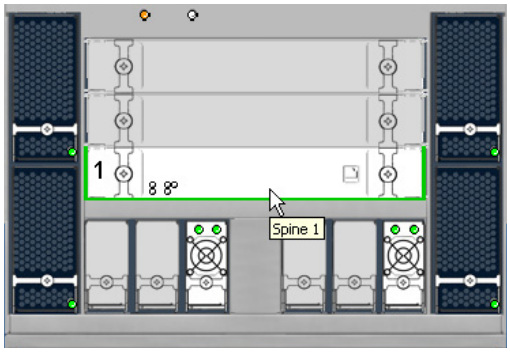


Spine Module View

To display the spine module view for the SFS 7012:

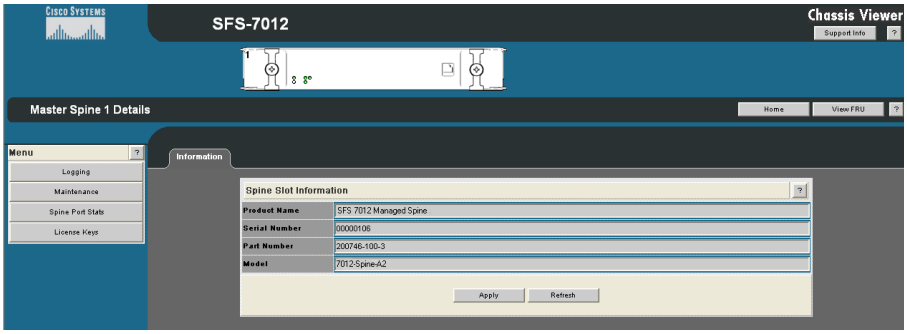
Step 1 Mouse over the spine module to display. The edges of the spine module are highlighted green as shown in Figure 3-7 below:

Figure 3-7 Spine Module Mouseover



Left click the mouse. The spine module view will be displayed.

Figure 3-8 Spine Module View



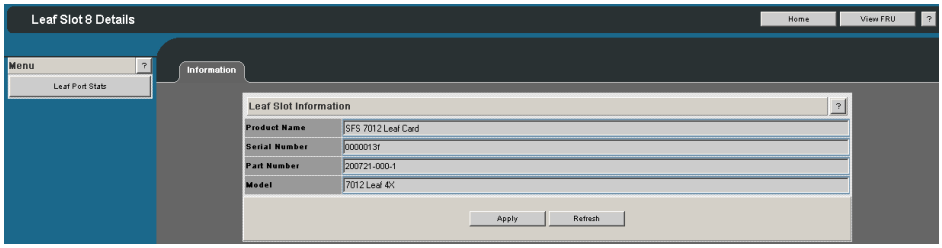
Leaf and Spine Module Component Details Area

The **Component Details Area** contains three areas.

- Details Header

- Information area.
- Menu

Figure 3-9 Leaf and Spine Component Details Area



Leaf and Spine Details Header

The leaf and spine Details Header allows the user to execute the most common tasks for the SFS 7012 switch:

- Display the Home page
- View field-replaceable unit (FRU) information.
- Access online help

Figure 3-10 Leaf and Spine Details Header

Leaf and Spine Information Area

The **Leaf and Spine Information Area** allows the user to view high-level information for each specific leaf or spine module. The information area contains two different fields:

- The white fields allow the user to add or modify applicable general and system information that is specific to their environment.
- The gray fields are tied to live data from the selected hardware component as well as live system information.

Additionally, the Component Information Area has **Apply** and **Refresh** buttons, which perform the following functionality:

Apply:

Saves any user edits within the white fields to flash memory.

Refresh:

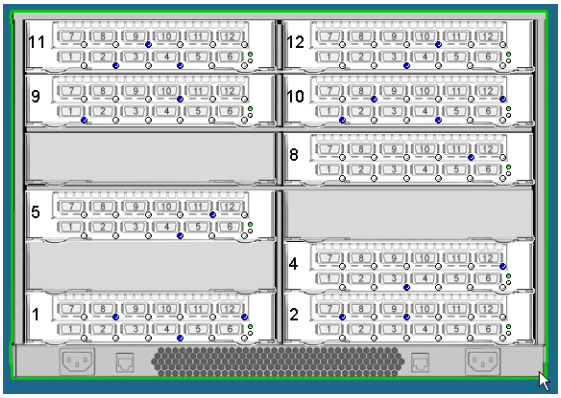
Refreshes all fields in the information areas.

Displaying the Chassis View

There are two ways to display the chassis view for the SFS 7012:

Step 1 Mouse over the outer region of the leaf module view. The edges of the chassis are highlighted green as shown in Figure 3-11 below:

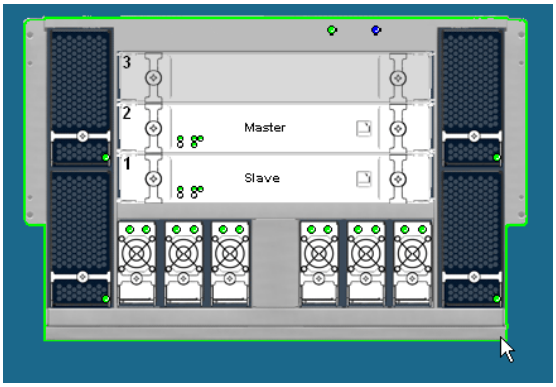
Figure 3-11 Leaf Module Chassis Mouseover



Left click the mouse. The chassis view will be displayed.

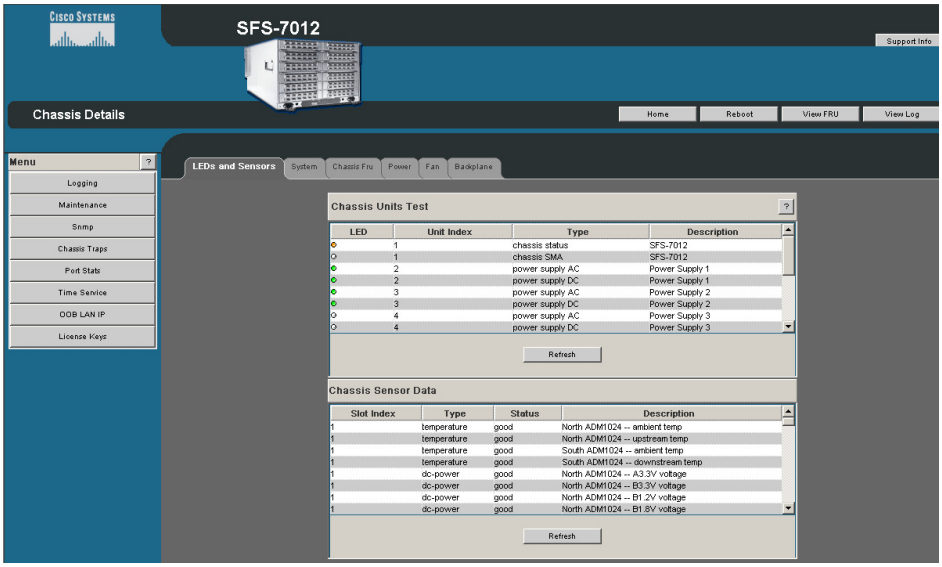
Step 2 The second way is to mouse over the outer region of the spine module view. The edges of the chassis are highlighted green as shown in Figure 3-12 below:

Figure 3-12 Spine Module Chassis Mouseover



Left click the mouse. The chassis view will be displayed.

Figure 3-13 Chassis Viewer Component Details Area



Chassis View Component Details Area

The **Component Details Area** contains three areas.

- Details Header
- Information area.
- Menu

Chassis Details Header

The Chassis Details Header allows the user to execute the most common tasks for the SFS 7012 switch:

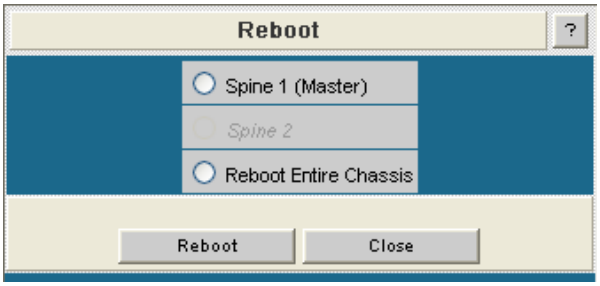
- Display the Home page
- Reboot
- View FRU
- View Log

Figure 3-14 Chassis Details Header

Rebooting Components from Chassis Viewer

Step 1 From the **Chassis Details** header, click **Reboot**. A screen similar to the following is displayed.

Figure 3-15 Reboot Screen



Step 2 Select the radio button of the spine(s) to be rebooted, or select the **Reboot Entire Chassis** radio button to reboot the SFS 7012 chassis and all spines.

Step 3 Click **Reboot**.

Rebooting Multiple Managed Spines

In a redundant management configuration it may occasionally be necessary for the user to reboot both managed spines. This is accomplished through the CLI of the master spine.

Step 1 Access the master spine CLI via Telnet, SSH, or through the SFS 7012 RS232 serial ports.

Step 2 The system prompts for a user name. At the prompt enter:

```
admin
```

Step 3 The system prompts for a password. At the prompt enter:

```
adminpass
```

The system responds with:

```
Welcome to the SFS 7012 CLI. Type 'list' for the list of commands.
```

Step 4 To reboot multiple spines on the SFS 7012 enter the following command:

```
reboot now -m -n
```

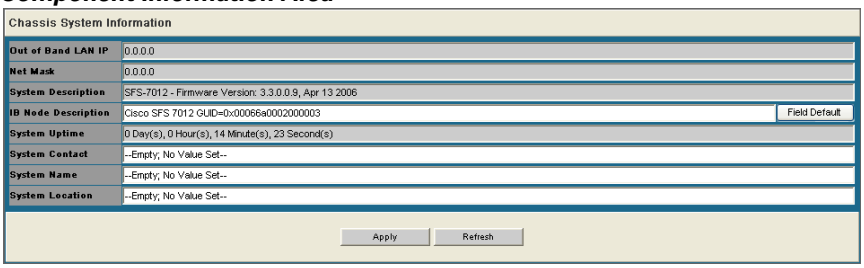
where:

- **now** initiates the reboot process as soon as the user presses **Enter** (i.e., no system **y/n** prompt).
- **-m** reboots just the management card of the master spine. This is a non-disruptive reboot (i.e., the reboot will not interfere with any switch traffic).
- **-n** reboots just the management card of the slave spine (in a non-disruptive manner).

Note If accessing the CLI through Telnet or SSH, the user will need to reconnect to the CLI following the reboot.

Chassis View Component Information Area

Figure 3-16 Component Information Area



The **Chassis View Component Information Area** allows the user to view important system information. These fields are tied to live data from the selected hardware component.

Additionally, the Component Information Area has **Apply** and **Refresh** buttons, which perform the following functionality:

Apply:

Saves any user edits within the white fields to flash memory.

Refresh:

Refreshes all fields in the information areas.

Chassis View Component Information Area Tabs

The tabs along the top of the information area present information about the following components:

- LED and sensor information
- Overall system information
- Switch Field Replaceable Unit (FRU) Information
- Power supply information
- Fan information
- Switch backplane information

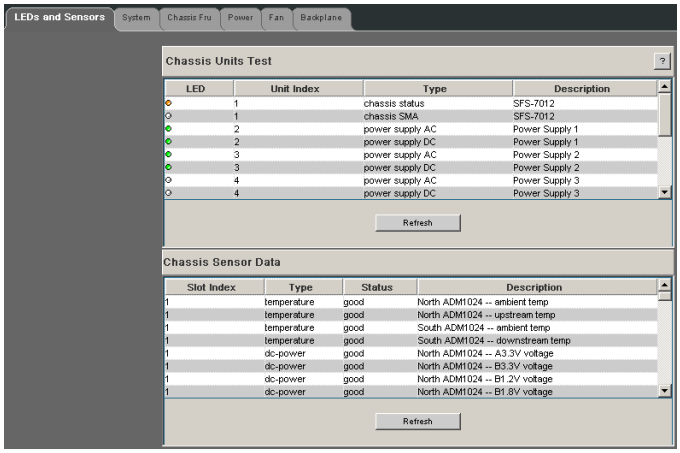
System Information Tab

LEDs and Sensors Tab

The LEDs and Sensors tab displays:

- Switch component LED information for chassis status, chassis SMA, fan and power supplies.
- Slot-based temperature and AC-power sensor data for the internal switching complex.

Figure 3-17 LEDs and Sensors Tab



Note For a detailed explanation of physical LEDs on the hardware components, please refer to the section SFS 7012 Component LEDs, page 2-34.

System Tab

The System tab displays the overall system information of the SFS 7012. This information includes the following items:

Out of Band LAN IP

The IP address of the switch. Note that changes to this field only take effect after a switch power cycle (i.e., shutting the switch and powering it back up). The IP address of the switch can be changed by the administrator.

Netmask

The current net mask settings for the chassis. Note that changes to this field only take effect after a chassis power cycle (i.e., shutting down the chassis and powering it back up). The net mask of the chassis can be changed by the administrator.

System Description

A textual description of the system, which can be assigned by the administrator.

IB Node Description

Assigned by the administrator, the IB node description is an IB fabric-applicable name that will be displayed within a subnet manager GUI. Note that changes to this field will only take effect after a the chassis is rebooted. To reset this field to the default setting, click the **Field Default** button.

Note If the IB Node Description field has been changed since the last reboot of either spine, the next reboot will be treated as disruptive.

System Uptime

The elapsed time since the last time switch was re-initialized.

System Contact

The textual identification of the contact person and their contact information for this system, assigned by the administrator.

System Name

The name for the system, assigned by an administrator. One convention is to use the system's fully qualified domain name as the **System Name**.

System Location

The location of the system, assigned by an administrator.

Apply Button

Saves any changes made by the user in the System tab to memory.

Refresh Button

Refreshes all fields in the System tab.

Chassis FRU Tab

The Chassis FRU tab displays switch Field Replaceable Unit (FRU) information. This information includes the following items:

Type

The type of component.

Description

A description of the component, assigned by an administrator.

Alias Name

Name of the component, assigned by an administrator.

Serial Num

Component serial number

Detail

A button for each row that displays additional detail about the component. Additional details include: Part Number, Model, Version, Manufacturer Name, Product Name, Manufacturer Identification, and Manufactured Date.

Apply Button

Saves any changes made by the user in the Chassis FRU tab to memory.

Refresh Button

Refreshes all fields in the Chassis FRU tab.

Power Tab

The Power tab displays switch power supply information. This information includes the following items:

Description

A description of the component, assigned by an administrator.

Status

Displays the status of the component.

Part Num

Displays the part number of the component.

Detail

A button for each row that displays additional detail about the component. Additional details include: Model, Version, Manufacturer Name, Product Name, Manufacturer Id, Manufactured Date

Apply Button

Saves any changes made by the user in the Power tab to memory.

Refresh Button

Refreshes all fields in the Power tab.

Fan Tab

The Fan tab displays switch fan information. For descriptions of the fields, see the Power Tab.

Backplane Tab

The Backplane tab displays switch backplane information. For descriptions of the fields, see the Power Tab.

Additionally, the user can add or modify applicable Switch component information, which is specific to their network environment.

Modifying Switch Component Information

Following is the procedure for modifying the fields for switch components:

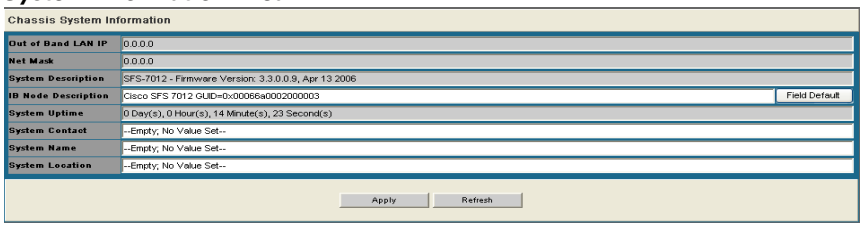
Step 1 Select the applicable tab; **System**, **Chassis FRU**, **Power**, **Fan**, or **Backplane**.

Step 2 Click on the row to be modified.

Step 3 In the text boxes, enter information which is applicable to the existing network environment.

Step 4 To save, click the **Apply** button at the bottom of the screen.

Figure 3-18 System Information Area



Configuration and Monitoring Features

The following section provides detailed, task-oriented descriptions for configuring and monitoring the SFS 7012 switch and its feature functionality.

Chassis View Menu

Figure 3-19 Chassis View Menu

The **Chassis View Menu** allows the user to execute all configuration and operation tasks available for the SFS 7012 switch.

Logging

The Logging submenu allows the user to set and reset levels for the message log file.

Figure 3-20 Logging Submenu

Set Level

Figure 3-21 Set Level Button

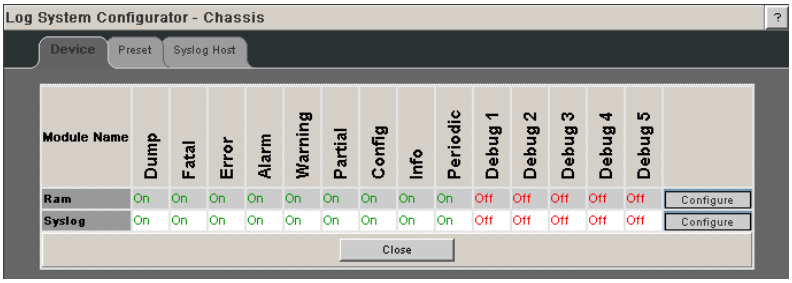
The Set Level button allows the user to set log level configuration parameters for all software modules on the SFS 7012.

To set log levels:

Step 1 From the menu, select **Logging.**

Step 2 From **Logging**, select **Set Level**. The Log System Configurator (Device Tab) window is displayed:

Figure 3-22 Log System Configurator (Device Tab)

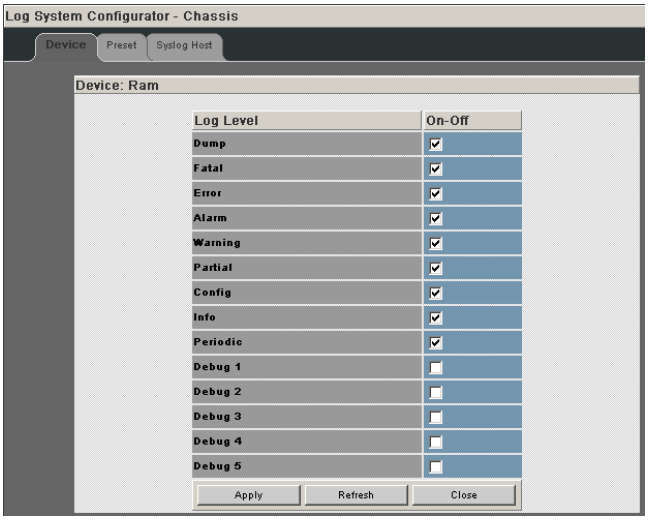


The Device tab presents current log level configuration settings for the following software modules:

- **RAM** = The circular log buffer contained in memory. To access the contents of this buffer, use the Chassis Viewer **View Log** button
- **Syslog** = All output messages are saved to the syslog host.

From this screen, the user can change any of the log level settings for a specific software module by clicking on the **Configure** hyperlink, which displays a configuration screen:

Figure 3-23 Device Tab: Software Module Configurator



To change any Log Level settings:

Step 1 Click the **On-Off** checkbox to the right of the setting.

Step 2 Click the **Submit** button to save any changes.

The following list describes each of the Log Level configuration parameters.

- **DUMP** – Dump: Indicates that a problem has caused the system to produce a system dump file. In most circumstances, it is recommended that the user retrieve the dump that was produced. Support engineers may require the information contained in the dump file to diagnose the cause of the problem.
- **FATAL** – Indicates that a non-recoverable system problem has occurred. The user should reboot the system or component and verify that the subsystem is fully functional to determine whether the fault has been corrected. If the problem persists, the user should contact the supplier.
- **ERROR** – Indicates that a serious system error has occurred which might be recoverable. If the system exhibits any instability, the user should reboot the system or component. If errors persist, the user should immediately contact the supplier's technical support.
- **ALARM** - Indicates that a serious problem has occurred which degrades capacity or service. If the error is recoverable, the user should correct the failure. If the alarm/failure persists, the user should reboot the system at a convenient time. If the problem is still not cleared, the user should contact the supplier.
- **WARNING** - Indicates that a recoverable problem has occurred. The user does not need to take action.
- **PARTIAL** - When more information is available, Partial causes additional message-related details to be displayed.
- **CONFIGURATION**: An informational message indicating changes that a user has made to the system configuration. The user does not need to take any action.
- **INFO**: Informational messages that occur during a system or component boot. The user does not need to take any action.
- **PERIODIC**: An informational message containing periodic statistics. The user does not need to take action.

Debug message levels 1 through 5: Debug messages are for supplier and/or Cisco engineering use and are not necessarily indicative of actions that an end user may need to take.

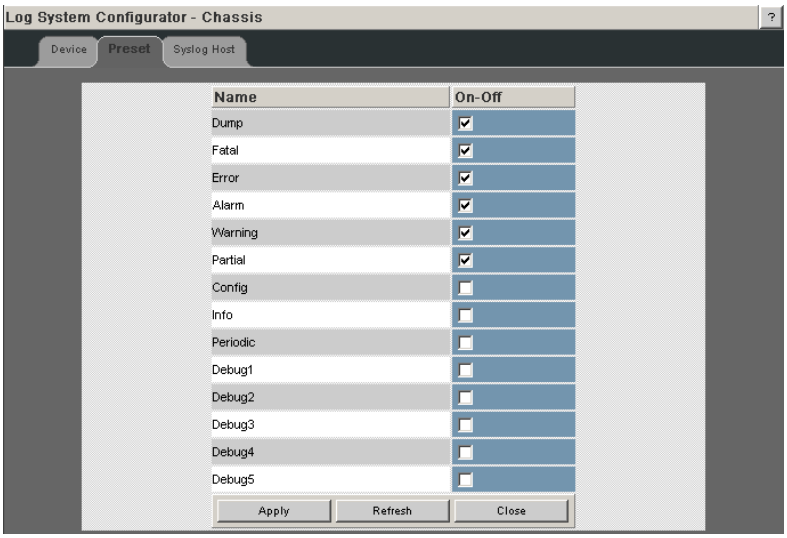
- **DEBUG1** – Messages that describe the states of connections and links.
- **DEBUG2** – Messages that describe major configuration changes or operations.
- **DEBUG3** – Messages that describe the I/O flow.
- **DEBUG4** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.
- **DEBUG5** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.

Note When configuring the log levels to display debug messages, care should be taken to ensure that system performance issues are weighed against troubleshooting requirements. Generally, the higher the debug number the more information is written to the log. Specifically, debug 3-5 have the most affect on system performance.

Preset Tab

The Preset tab allows the user to quickly change log level settings for all software modules on the switch.

Figure 3-24 Log System Configurator: Preset Tab



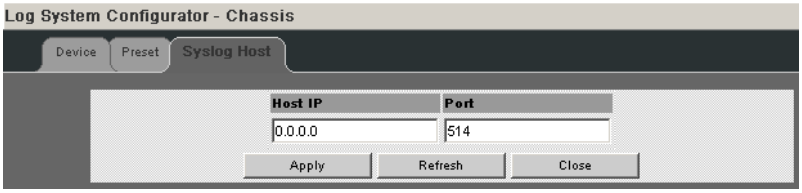
To change the log level settings:

Step 1 Click the **On-Off** checkbox to the right of the setting(s).

Step 2 Click the **Submit** button to save any changes.

Syslog Tab

Figure 3-25 Log System Configurator: Syslog Host Tab



The Syslog tab allows the user to save log files to a syslog host.

To setup the syslog host:

Step 1 In the **Host IP** dialog box, enter the IP address of the syslog host where the log files are to be saved.

Step 2 Click the **Apply** button to save the IP address.

Note Do not change the **Port** setting.

Configure Syslog on a Linux Server

Step 1 Edit the **`/etc/sysconfig/syslog`** file and ensure that the **`-r`** is included in the **`SYSLOGD_OPTIONS`**. This allows logging from a remote system. For example:

```
SYSLOGD_OPTIONS="-r -m 0"
```

Step 2 Type **`/etc/init.d/syslog restart`**, and press **Enter**.

Note To centralize logging for all switches in an IB fabric, the user can configure each switch to point to the same syslog server (running Linux), which has the syslog daemon (**`syslogd`**) running.

Reset Log Levels

The Reset Levels button resets the logging levels to their factory default values.

Figure 3-26 Reset Levels Button

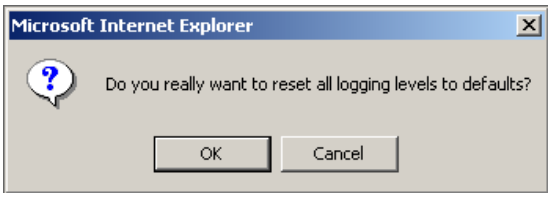
To reset the logging levels:

Step 1 From the menu, select **Logging.**

Step 2 Click **Logging**.

Step 3 Click **Reset Levels**. The Reset Levels window is displayed:

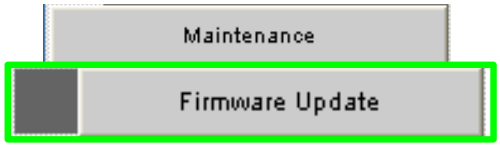
Figure 3-27 Reset Log Levels Window



Step 4 To reset the logging levels, click **OK**.

Firmware Update

Figure 3-28 Firmware Update Button



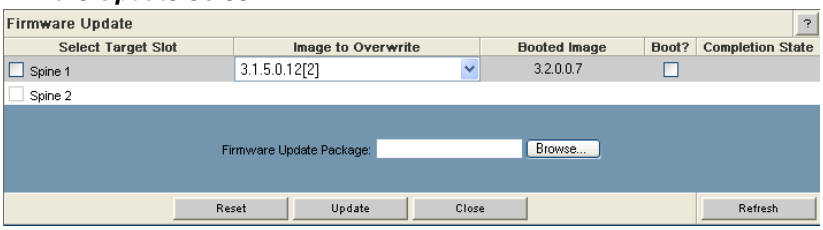
The Firmware Update button allows the user to select an alternate firmware file for the SFS 7012. These alternate files are reflected in the drop-down lists in the Firmware Update screen.

To download firmware:

Step 1 From the menu, select **Maintenance**.

Step 2 Click **Firmware Update**. The Firmware Update screen is displayed.

Figure 3-29 Firmware Update Screen



Step 3 In the **Select Target Slot** Column, select the hardware component to change its firmware.

Note If there are multiple spine modules, the user can select all applicable slots.

Step 4 From the **Image to Overwrite** drop-down list, choose a firmware image to overwrite.

Step 5 In the **Firmware Update Package:** text box, enter the path to the alternate firmware file. If the path is not known, the user can use the **Browse...** button to locate it.

Step 6 To have the new image become active after the next reboot, check the box in the **Boot?** Column.

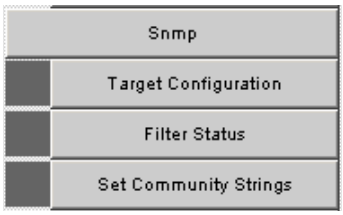
Step 7 Click the **Update Firmware** button.

Note Before using the **Browse...** button, make certain that the browser can connect to the server where the firmware files reside.

SNMP

The SNMP submenu allows the user to configure and filter SNMP trap information.

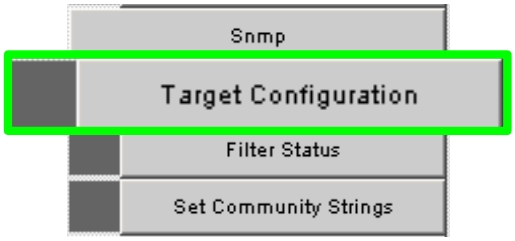
Figure 3-30 SNMP Submenu



Target Configuration

The Target Configuration button displays the SNMP Target Configuration Window, allowing the user to view and edit existing SNMP trap destinations.

Figure 3-31 Target MIB Configuration Button



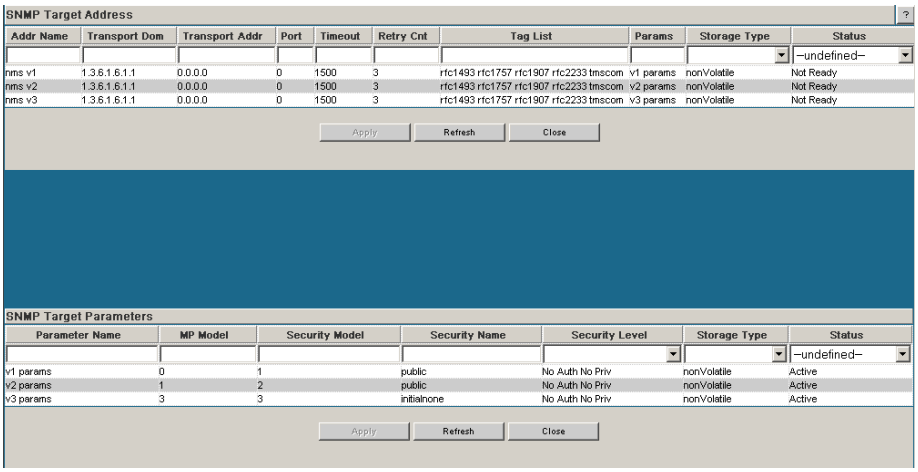
To display the Target Configuration window:

Step 1 From the menu, select **SNMP**.

Step 2 Select **Target Configuration**.

Step 3 The SNMP Target Configuration window is displayed:

Figure 3-32 SNMP Target Configuration Window



The top section of the window, SNMP Target Addresses, allows the user to determine what type of SNMP traps are sent, and where they are sent. The rows provide an area for specifying multiple trap destinations. The bottom section of the window, SNMP Target Parameters, allows the user to configure each trap destination with version, optional security information, and filtering mechanisms.

The **Apply** button applies the current settings to either the SNMP Target Addresses or SNMP Target Parameters section.

Note The Target Configuration window is used for viewing and modifying existing SNMP target entries. It is not used for creating new target entries.

To create a new target entry, use the following CLI command:

```
snmpTargetAddr add -n name -a addr  [-p port] [-t timeout] [-r retry_count] [-l
tag_list] [-v parameters] [-s storage_type]
```

For example:

To add a trap target with the IP address 192.168.0.123 that accepts SNMP v2c style traps:

```
snmpTargetAddr add -n traphost1 -a 192.168.0.123 -p "v2 params"
```

Or, to add the same target except using SNMP v1traps:

```
snmpTargetAddr add -n traphost1 -a 192.168.0.123 -p "v1 params"
```

Target Configuration Window Field Descriptions

The following are descriptions for each field in the Target MIB Configuration window:

SNMP Target Addresses:

- Address Name

  Specifies a unique, administrator-defined name the system uses to identify a row.

- Transport Domain

  Specifies the transport type of the address contained in the snmpTargetAddrTAddress object.

- Transport Address

  Specifies the IP address and port in hex, separated by colons. The first eight values make up the IP address, the last 4 make up the port number. For example, specify **0xc0:a8:00:65:00:a2** for **192.168.0.101 Port: 162**.

Note The combination of the Transport Domain and the Transport Address determines the trap destination.

- Port

  Specifies the TCP port which the SNMP trap will be sent.
- Timeout

  Specifies the time that the trap sender waits on a response before re-sending the trap.
- Retry Count

  Specifies the number of attempts to be made to send the trap after a timeout condition occurs.

Note Timeout and Retry Count are SNMP v2.c and above. Not applicable for v1 traps.

- Tag List

  Specifies which traps should be sent to this particular destination.

Note RFC2233 specifies the link up/down traps. Including RFC2233 in the Tag List specifies that the trap receiver will get link up/down traps.

- Parameters

  Specifies a mapping to an entry in the SNMP Target Parameters table, determining the version of SNMP to use.
- Storage Type

  This field determines whether or not the entry is saved for each reboot of the SFS 7012.
  - *Nonvolatile* means that the value is saved, and remains with each subsequent reboot.
  - *Volatile* or *Other* indicates it will not be saved.
- Status

  Indicates the current status of the row. The row may be in one of three states:
  - Active
  - Not in service
  - Not Ready

Note A status of **not in service** indicates that the current row will not be used in the event a trap is generated by the system. Toggling a trap to not in service, which temporarily suspends trap forwarding, may be useful to keep values intact.

SNMP Target Parameters:

- Parameter Name

  Specifies a mapping to an entry in the SNMP Target Parameters table, determining the version of SNMP to use.
- MP Model

  The Message Processing Model to be used when generating SNMP messages for entry.

- Security Model

  The Security Model to be used when generating SNMP messages using this entry. Values for this field are 1, 2, or 3.

- Security Name

  Security name identifies the entity for whom SNMP messages will be generated.

Note This is equivalent to the community string in an SNMP get.

- Security Level

  One of three options:

  - *NoAuthNoPriv*: No Authentication, no privacy.
  - *AuthNoPriv*: Authentication, no privacy.
  - *AuthPriv*: Authentication and privacy

- Storage Type

  This field determines whether or not the entry is saved for each reboot of the SFS 7012.

  - *Nonvolatile* means that the value is saved, and remains with each subsequent reboot.
  - *Volatile* or *Other* indicates it will not be saved.

- Status

  Indicates the current status of the row. The row may be in one of three states:

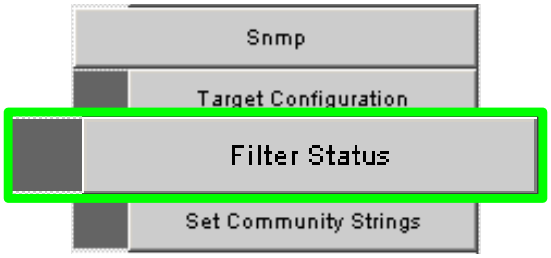
  - Active
  - Not in service
  - Not Ready

Note A status of **not in service** indicates that the current row will not be used in the event a trap is generated by the system. Toggling a trap to not in service, which temporarily suspends trap forwarding, may be useful to keep values intact.

Filter Status

The SNMP Filter Status screen allows the user to view parameters for rfc2273 (SNMP-NOTIFICATION-MIB).

Figure 3-33 Filter Status Button

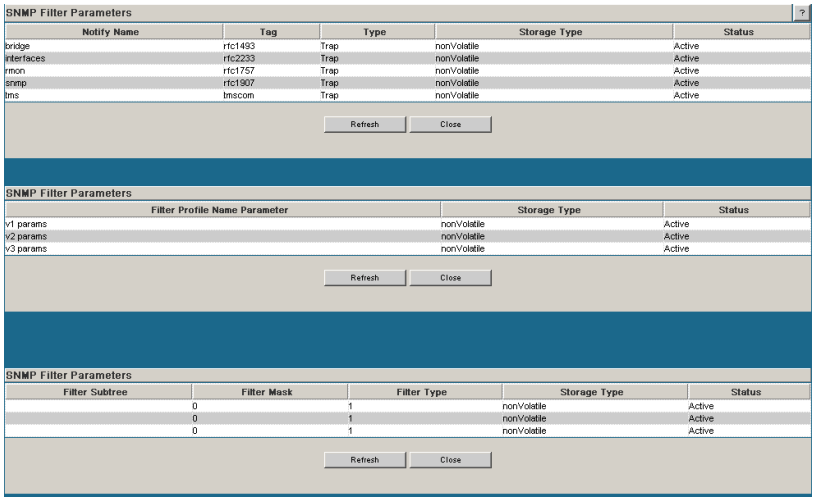


To view SNMP filter status:

Step 1 From the menu, select **SNMP**

Step 2 Click **Filter Status**. The **SNMP Filter Status** screen is displayed.

Figure 3-34 Filter Status Screen

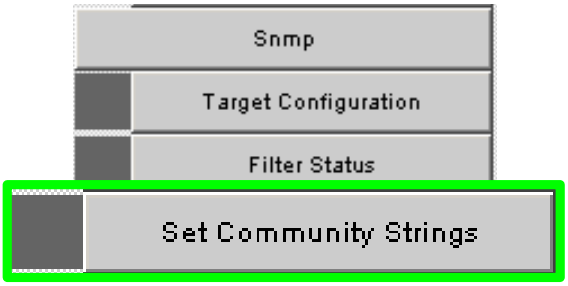


Setting Community Strings

The Set Community Stings screen allows the user to set two SNMP community names:

- Read Only Community Name
- Read/Write Community Name

Figure 3-35 Set Community Strings Button



To set the Community Strings:

Step 1 Click **SNMP**

Step 2 Click **Set Community Strings**. The **Set Community Strings** screen is displayed.

Figure 3-36 Set Community Strings Window

The first field, "**Read Only Comm. Name**," is the community string that when specified in an SNMP client, allows read only access to SNMP fields exported by the SNMP server.

The second field, "**Read/Write Comm. Name**," is the community string that when specified in an SNMP client, allows read and write access to SNMP fields exported by the SNMP server.

Step 3 In each field, enter a meaningful name (such as **public** and **private** shown above), and click on **Apply**.

Chassis Traps

The Chassis Trap Control screen allows the user to set default trap scenarios related to SFS 7012.

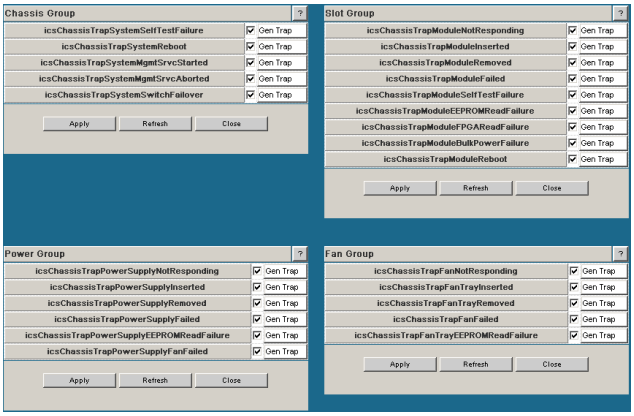
Figure 3-37 Chassis Trap Control

Step 1 Click **Chassis**.

Step 2 Click **Chassis Traps**

Step 3 Click **Trap Control**. The **Chassis Trap Control** screen is displayed.

Figure 3-38 Chassis Trap Control Screen



Step 4 Select or deselect the desired trap(s).

Note To generate an immediate trap, click the applicable **Gen Trap** button.

Step 5 To save settings, click on **Apply**.

Following are definitions for each chassis trap:

Chassis Group

icsChassisTrapSystemSelfTestFailure

This trap indicates that the chassis failed one or more of its self-test(s).

icsChassisTrapSystemReboot

This trap indicates that the chassis is in the process of rebooting.

icsChassisTrapSystemMgmtSrvcStarted

This trap indicates that the internal service used to support the management of the chassis is operational.

icsChassisTrapSystemMgmtSrvcAborted

This trap indicates that the internal service used to support the management of the chassis has terminated abnormally.

icsChassisTrapSystemSwitchFailover

This trap indicates that there was a fail over from one switch in the chassis to the other.

Slot Group

icsChassisTrapModuleNotResponding

This trap indicates that a module is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

icsChassisTrapModuleInserted

This trap indicates that a module was inserted into the chassis.

IcsChassisTrapModuleRemoved

This trap indicates that a module was removed from the chassis.

icsChassisTrapModuleFailed

This trap indicates that a module has failed and is not operational.

icsChassisTrapModuleSelfTestFailure

This trap indicates, that the module failed one or more of its self-test.

icsChassisTrapModuleEEPROMReadFailure

This trap indicates, that an error condition was encountered when reading the EEPROM of the module.

icsChassisTrapModuleFPGAReadFailure

This trap indicates, that an error condition was encountered when reading the Field-Programmable Gate Array (FPGA) of the module.

icsChassisTrapModuleBulkPowerFailure

This trap indicates, that the bulk power used by a module has failed within the chassis.

icsChassisTrapModuleReboot

This trap indicates that the chassis is in the process of rebooting.

Power Group

icsChassisTrapPowerSupplyNotResponding

This trap indicates that a power supply is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

icsChassisTrapPowerSupplyInserted

This trap indicates that a power supply was inserted into the chassis.

icsChassisTrapPowerSupplyRemoved

This trap indicates that a power supply was removed from the chassis.

icsChassisTrapPowerSupplyFailed

This trap indicates that a power supply has failed and is not operational.

icsChassisTrapPowerSupplyEEPROMReadFailure

This trap indicates, that an error condition was encountered when reading the EEPROM of the power supply.

icsChassisTrapPowerSupplyFanFailed

This trap indicates that a power supply fan has failed and is not operational.

Fan Group

icsChassisTrapFanNotResponding

This trap indicates that a fan is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

icsChassisTrapFanTrayInserted

This trap indicates that a fan was inserted into the chassis.

icsChassisTrapFanTrayRemoved

This trap indicates that a fan was removed from the chassis.

icsChassisTrapFanFailed

This trap indicates that a fan has failed and is not operational.

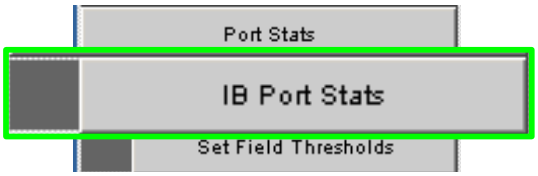
icsChassisTrapFanTrayEEPROMReadFailure

This trap indicates, that an error condition was encountered when reading the EEPROM of the fan tray.

SFS 7012 Port Statistics

The **Chassis View Port Statistics** area provides IB port information for all of the external and internal ports of the SFS 7012.

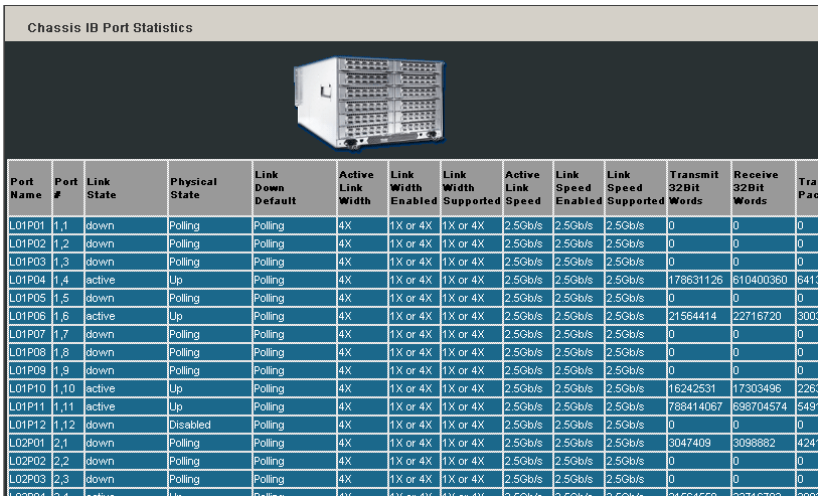
Figure 3-39 IB Port Statistics



To view port statistical information, do the following:

Step 1 From the Chassis View Port Statistics submenu, select **IB Port Stats**. The IB Port Statistics window is displayed:

Figure 3-40 IB Port Statistics



Port Name	Port #	Link State	Physical State	Link Down Default	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 32Bit Words	Receive 32Bit Words	Tra Pac
L01P01	1,1	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P02	1,2	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P03	1,3	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P04	1,4	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	178631126	610400360	641
L01P05	1,5	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P06	1,6	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	21564414	22716720	300
L01P07	1,7	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P08	1,8	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P09	1,9	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L01P10	1,10	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	16242531	17303496	226
L01P11	1,11	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	788414067	698704574	549
L01P12	1,12	down	Disabled	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L02P01	2,1	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3047409	3098882	424
L02P02	2,2	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0
L02P03	2,3	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0

Understanding Port Naming Conventions

Following is an explanation of the conventions used in the **Port Name** column.

Leaf modules/ports:

L = Leaf module number

P = Leaf module port number

Example: L10P01 is leaf module 10 port number 1.

Interswitch Link (ISL) Ports:

S = Spine module number

L = Leaf leaf module number

A = Spine module switch chip A

B = Spine module switch chip B

Example: S2AL08 is the ISL between spine module 2, switch chip A and leaf module 8.

Note Spine chips are referenced by the spine number and the switch chip identifier. Each spine module contains two switch chips (Switch chip A and B).

Port Statistics Field Descriptions

Port Name/Port Number:

Corresponds to external leaf module number/port number, spine module number/port number, and all interswtich links.

Link State:

Indicates whether the InfiniBand link associated with the physical port is up or down. Possible values are **no state change**, **down**, **init**, **armed**, **active**, and **unknown**.

Physical State:

Indicates whether the internal connection to the InfiniBand port is up or down. Possible values are **No State Change**, **Sleep**, **Polling**, **Disabled**, **Training, Up**, and **Error Recovery**.

Link Down Default:

Indicates the default down state as set by the subnet manager. Possible values are **No State Change**, **Sleep**, **Polling**, and **Unknown**.

Active Link Width:

Indicates the bandwidth of the link on the backplane. The bandwidth is specified as a multiplier of 2.5 Gbit/sec full duplex serial links. As an example, 4X specifies a bandwidth of 10 Gbit/sec.

Note Values of 1X are possible in this field with 4X IB cables if poor cable connections or defective 4X IB cables are used.

Link Width Enabled:

Indicates actual link width as opposed to the supported link width.

Link Width Supported:

Indicates the link width in terms of multipliers of 2.5 Gbit/sec full duplex serial links supported by the port.

Active Link Speed:

Indicates the speed of the full duplex serial link. This is either 2.5Gbps (single data rate, or SDR), or 5.0Gbps (double data rate, or DDR).

Link Speed enabled:

Indicates the actual link speed as opposed to the supported link speed. This could be 2.5Gbps (SDR), 5.0Gbps (DDR) or both.

Link Speed supported:

The supported link speed of the port. This could be 2.5Gbps (SDR), 5.0Gbps (DDR) or both.

InfiniBand Statistics:

Transmit 32 Bit Words:

The number of 32-bit data words transmitted by the port, not including flow control and VCRC data.

Receive 32 Bit Words:

The number of 32-bit data words received by the port, not including flow control and VCRC data.

Transmit Packets:

The number of data packets transmitted by the port, not including flow control packets.

Receive Packets:

The number of data packets received by the port, not including flow control packets.

Symbol Errors:

The number of times an 8B10B encoding violation, or a disparity violation was detected. If multiple errors are detected simultaneously (in more than one lane), the counter only increments by one. The value of the counter does not increment past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Link Error Recovery:

Indicates the number of times the link error recovery process happened successfully. The value of the counter does not increment past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Link Downed:

The number of times the link error recovery process failed. The value of the counter does not increment past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Receive Errors:

Number of errors received on the port.

Remote Physical Error Received:

Number of remote physical errors received on the port.

Transmit Discards:

Number of port transmit discards.

Local Link Integrity Errors:

Number of local link integrity errors.

Excessive Buffer Overrun:

Number of excessive buffer overrun errors.

Pkey Violations Inbound:

Indicates the number of times an invalid partition key (PKey) was received. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Pkey Violations Outbound:

Indicates the number of times an invalid PKey was sent. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Raw Violations Inbound:

Number of times raw inbound packet discarded.

Raw Violations Outbound:

Number of times raw outbound packet was discarded.

Leaf and Spine Module IB Port Statistics

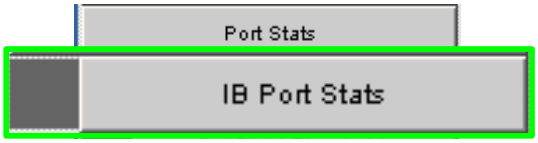
To access IB port statistics for a specific leaf or spine module, perform the following steps.

Leaf Modules

Step 1 Select a leaf module. The leaf module view is displayed.

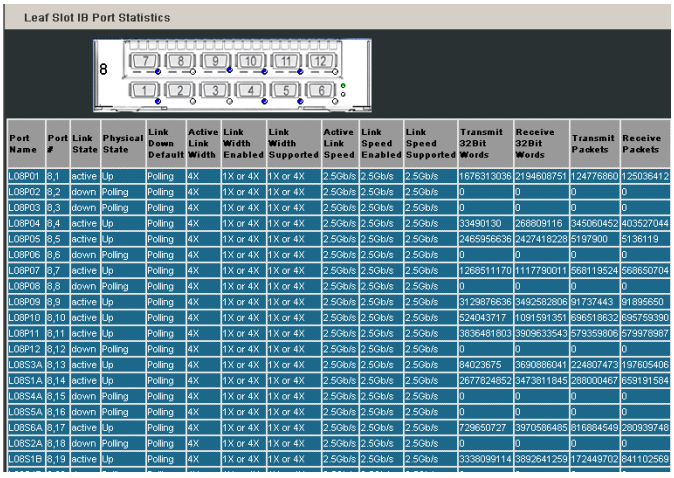
1. From the Leaf Port Stats menu, select IB Port Stats.

Figure 3-41 Leaf Port Stats Menu



The leaf port statistics window is displayed:

Figure 3-42 Leaf Port Statistics Window



Port Name	Port #	Link State	Physical State	Link Down Default	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 32Bit Words	Receive 32Bit Words	Transmit Packets	Receive Packets
L08P01	8,1	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1676313036	2194606751	124776860	125036412
L08P02	8,2	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08P03	8,3	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08P04	8,4	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	33490130	268809116	345060452	403527044
L08P05	8,5	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2465956636	2427418228	5197900	5136119
L08P06	8,6	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08P07	8,7	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1268511170	1117790011	568119524	568650704
L08P08	8,8	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08P09	8,9	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3129876636	3492582806	91737443	91895650
L08P10	8,10	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	524043717	1091591351	696518632	695759390
L08P11	8,11	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3836481803	3909633543	579359806	579978987
L08P12	8,12	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08S3A	8,13	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	84023675	3690886041	224807473	197605406
L08S1A	8,14	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2677824652	3473811645	288000467	659191584
L08S4A	8,15	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08S5A	8,16	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08S6A	8,17	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	729650727	3970586485	816884549	280939748
L08S2A	8,18	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0
L08S1B	8,19	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3338099114	3892641259	172449702	841102569

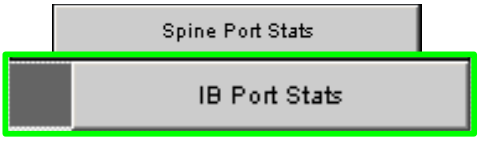
For information on the each IB port statistic field, refer to the section Port Statistics Field Descriptions, page 3-68

Spine Modules

Step 1 Select a spine module. The spine module view is displayed.

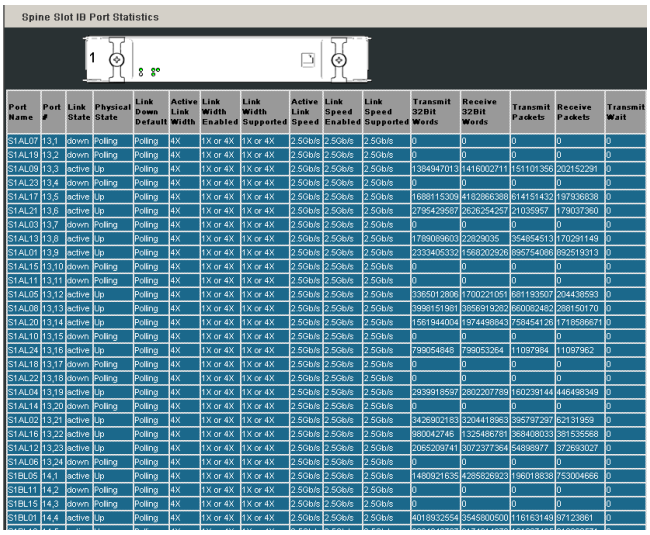
Step 2 From the Spine Port Stats menu, select IB Port Stats.

Figure 3-43 Spine Port Stats Menu



The spine port statistics window is displayed:

Figure 3-44 Spine Port Statistics Window



Port Name	Port #	Link State	Physical State	Link Down Default	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 32Bit Words	Receive 32Bit Words	Transmit Packets	Receive Packets	Transmit Wait
S1AL07	13,1	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL19	13,2	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL09	13,3	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1384947013	1416002711	151101356	202152291	0
S1AL23	13,4	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL17	13,5	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1688115309	4182866388	614151432	197936838	0
S1AL21	13,6	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2795429587	2626254257	21035957	179037360	0
S1AL03	13,7	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL13	13,8	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1789089603	22829035	3548545913	170291149	0
S1AL01	13,9	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2333405332	1568202926	895754086	892519313	0
S1AL15	13,10	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL11	13,11	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL05	13,12	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3365012806	1700221051	681193507	204438593	0
S1AL08	13,13	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3998151981	3856919282	660082482	288150170	0
S1AL20	13,14	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1561944004	1974498843	75845412	1718586671	0
S1AL10	13,15	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL24	13,16	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	799054848	799053264	11097984	11097962	0
S1AL18	13,17	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL22	13,18	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL04	13,19	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2939918597	2602207789	160239144	446498349	0
S1AL14	13,20	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1AL02	13,21	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	3426902183	3204418983	395797297	62131959	0
S1AL16	13,22	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	980042746	1325486781	368408033	381535568	0
S1AL12	13,23	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	2065209741	3072377364	54898977	372693027	0
S1AL06	13,24	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1BL05	14,1	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	1480921635	4285826923	196018838	753004666	0
S1BL11	14,2	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1BL15	14,3	down	Polling	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0
S1BL01	14,4	active	Up	Polling	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	4018932554	3545900500	116163149	9723861	0

For information on the each IB port statistic field, refer to the section Port Statistics Field Descriptions, page 3-68

Set Field Thresholds

The Set Field Thresholds screen allows the user to set, for a specific parameter(s), an error message threshold for the 12 cable ports on the SFS 7012.

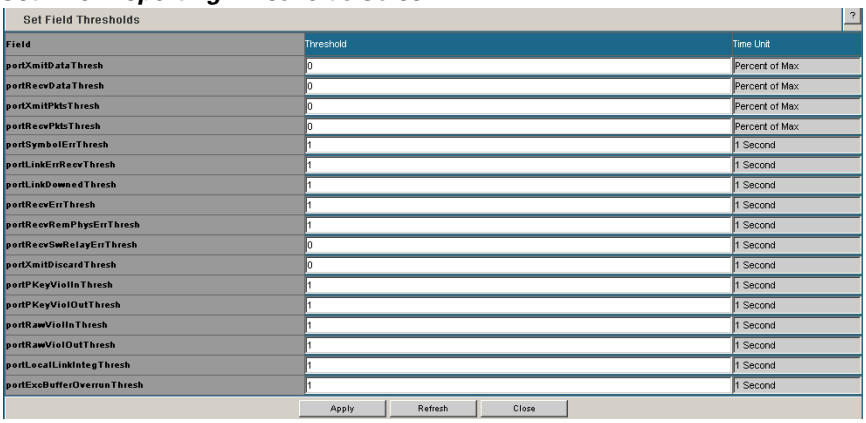
Figure 3-45 Set Field Thresholds

To change error reporting thresholds, do the following:

Step 1 Click on **Port Stats**.

Step 2 Click on **Set Field Thresholds**. The Set Field Thresholds screen is displayed:

Figure 3-46 Set Error Reporting Thresholds Screen



Step 3 To change a threshold value for any field:

a. Click in the **Threshold** field.

b. Enter a new threshold value.

Note For those fields with a "**Percent of Max**" time unit, the user may enter a number from 0 to 100. For those fields with a "**1 Second**" time unit, the user may enter a number from 1 to 65,535.

c. Click **Apply**.

Note Any port which exceeds the configured thresholds will be displayed as red on the home page.

The following are descriptions for each field in the Set Field Thresholds area:

Note The thresholds for the following four fields are set as a percentage of maximum; that is the percentage of maximum port capacity, which depending upon the IB fabric configuration can be:

- 4X (10 Gbps)
- 1X (2.5 Gbps)

portXmitDataThresh

The threshold for the number of 32-bit data words transmitted by the port.

portRecvDataThresh

The threshold for the number of 32-bit data words received by the port.

portXmitPktsThresh

The threshold for the number of data packets transmitted by the port.

portRecvPktsThresh

The threshold for the number of data packets received by the port.

Note The thresholds for the following fields are set based upon the number of error message which can occur in one second. The value can be from 1 to 65,535.

portSymbolErrThresh

The threshold for the number of times a 8B10B encoding violation, or a disparity violation was detected on the port.

portLinkErrRecvThresh

The threshold for the number of times the link error recovery process happened successfully on the port.

portLinkDownedThresh

The threshold for the number of times the link error recovery process failed on the port.

portRecvErrThresh

The threshold for the number of errors received on the port.

portRecvRemPhysErrThresh

The threshold for the number of remote physical errors received on the port.

portRecvSwRelayErrThresh

The threshold for the number of switch relay errors received on the port.

portXmitDiscardThresh

The threshold for the number of transmit discards received on the port.

portPKeyViolInThresh

The threshold for the number of times PKey inbound was invalid on the port.

portPKeyViolOutThresh

The threshold for the number of times PKey outbound was invalid on the port.

portRawViolInThresh

The threshold for the number of times a raw inbound packet was discarded by the port.

portRawViolOutThresh

The threshold for the number of times a raw outbound packet was discarded by the port.

portLocalLinkIntegThresh

The threshold for the number of local link integrity errors on the port.

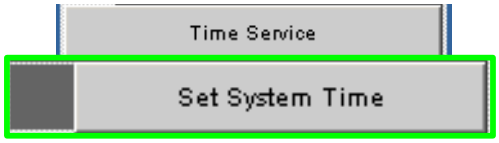
portExcBufferOverrunThresh

The threshold for the number of excessive buffer overrun errors on the port.

Time Service

The System Time Information screen allows the user to set the system time using either network time protocol (NTP) or manual overrides.

Figure 3-47 Switch Time Service

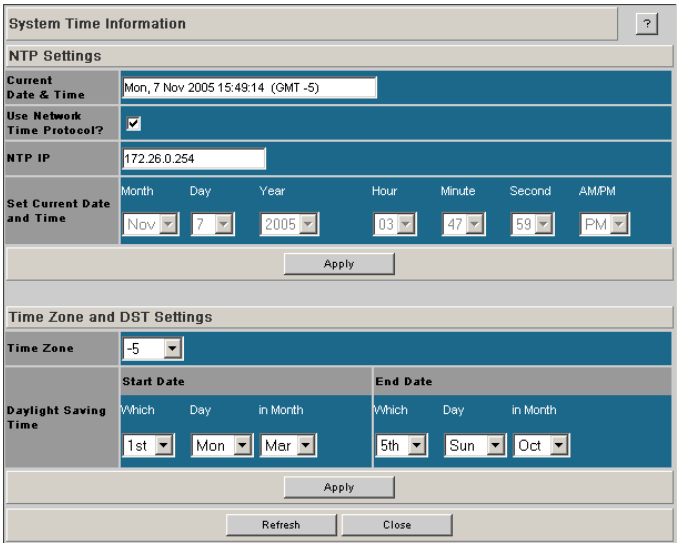


To set the system time:

Step 1 From the menu, click **Time Service**.

Step 2 Click **Set System Time**. The **System Time Information** screen is displayed:

Figure 3-48 System Time Information Screen



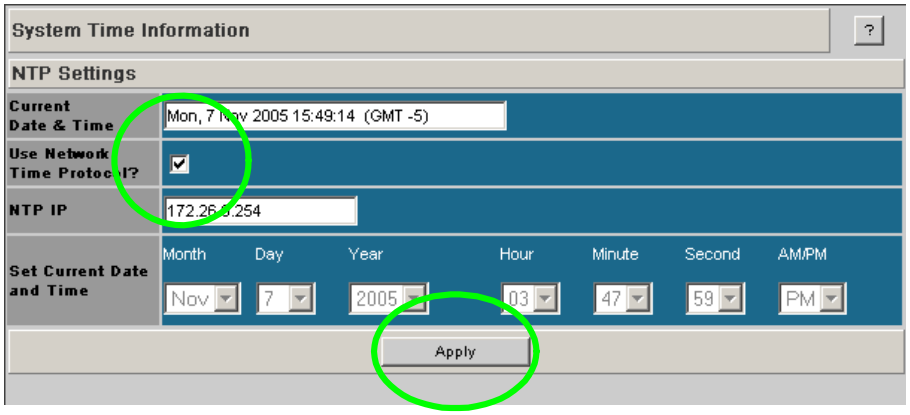
To use NTP:

Step 1 Click the **Use Network Time Protocol?** checkbox.

Step 2 Enter the IP address for the NTP server.

Step 3 To save, click on **Apply**.

Figure 3-49 Time Service - NTP Setup



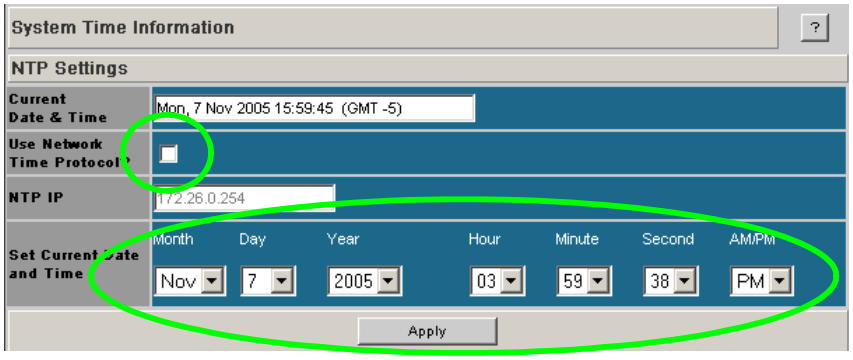
To manually set the system time:

Step 1 Make sure the **Use Network Time Protocol?** checkbox is unchecked.

Step 2 Set the current date and time using the drop-downs for **Month**, **Day**, and **Year** as well as **Hour**, **Minute**, **Seconds**, and **AM/PM**.

Step 3 To save, click on **Apply**.

Figure 3-50 Time Service - Manual Setup



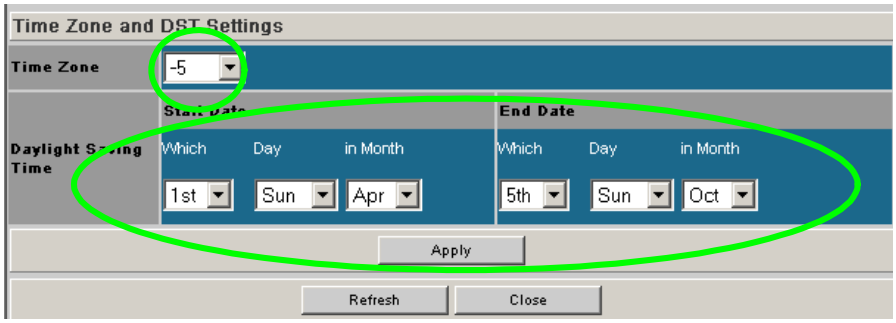
To set time zone and daylight saving time (DST) settings:

Step 1 In the **Time Zone** drop-down, select the correct time zone based upon Greenwich Mean Time (GMT).

Step 2 Using the **Which**, **Day**, **in Month** drop-downs, set the start and end dates for daylight saving time.

Step 3 To save, click on **Apply**.

Figure 3-51 Time Service - Time Zone/Daylight Saving Time Setup



Time Zone Tips:

In the U.S. the following time zones are in effect:

- Eastern Standard Time = GMT –5
- Central Standard Time = GMT –6
- Mountain Standard Time = GMT –7
- Pacific Standard Time = GMT -8

Daylight Saving Time Tips:

For most of the United States, Daylight Saving Time begins at 2 a.m. on the first Sunday of April, and ends at 2 a.m. on the last Sunday of October. Using this information, the Daylight Saving Time Start Date will always be the 1st Sunday in April. However, the Daylight Saving Time End Date will vary between the 4th and 5th Sunday of October. Be certain to check a calendar when setting this parameter. Following are upcoming DST end dates:

Note Beginning in 2007, Daylight Saving Time in the United States begins at 2 a.m. on the second Sunday of March, and ends at 2 a.m. on the first Sunday in November.

- 2006 = Oct. 29 (5th)

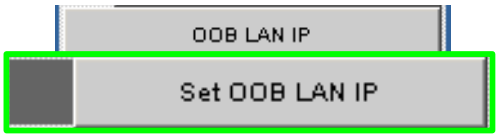
Additionally, for those US regions that do not observe DST, the start and end dates in the **Which**, **Day**, **in Month** settings, should be set to the **exact same date**.

Configuring the Switch OOB IP Address

To configure the Switch IP address:

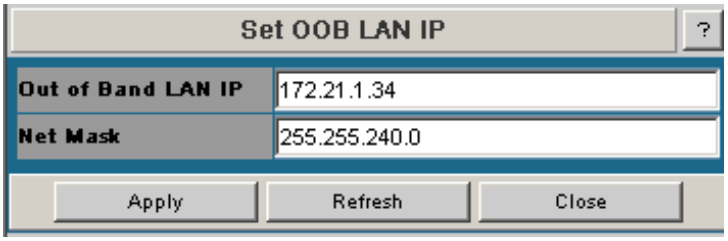
Step 1 From the **OOB LAN IP** submenu, click **Set OOB LAN IP**.

Figure 3-52 Set Switch OOB IP Address Button



Step 2 Click in the **OOB IP Address** field.

Figure 3-53 Set OOB LAN IP Window



Step 3 Enter the correct switch IP address.

Step 4 Enter the correct net mask.

Step 5 Click **Apply**.

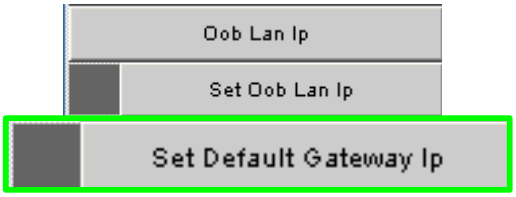
Configuring the Switch Default Gateway IP Address

The **Set Default Gateway IP** address Window allows the user to configure the IP address for the default gateway to route packets from the OOB management port to an external network.

To configure the Switch default gateway IP address:

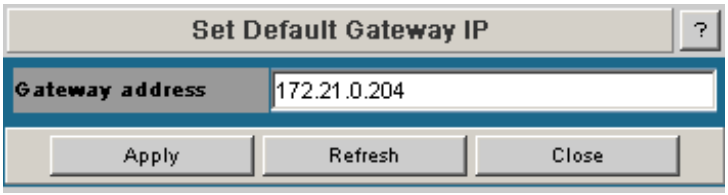
Step 1 From the **OOB LAN IP** submenu, click **Set Default Gateway IP**.

Figure 3-54 Set Switch Default Gateway IP Address Button



Step 2 Click in the **OOB IP Address** field.

Figure 3-55 Set Default Gateway IP Window



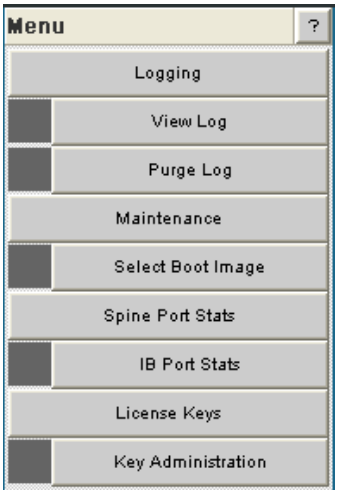
Step 3 Type in the correct switch default gateway IP address.

Step 4 Click **Apply**.

Note A reboot is required to activate the new gateway IP address.

Spine View Menu

Figure 3-56 Spine View Menu



Note For information on IB port statistics refer to the section SFS 7012 Port Statistics, page 3-67.

Logging

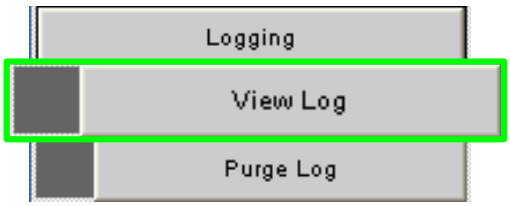
The Logging submenu allows the user to view, set levels, reset levels, and purge the message log file.

Figure 3-57 Logging Submenu

Viewing the Log

The View Log button allows the user to view the message log.

Figure 3-58 View Log Button

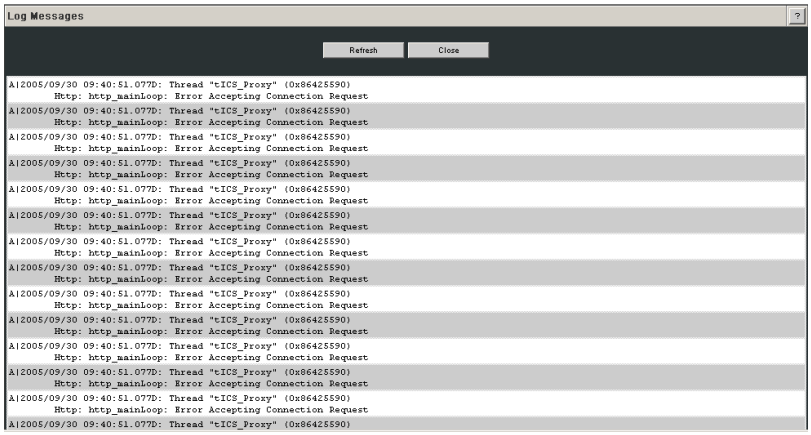


To view the message log:

Step 1 From the menu, select **Logging.**

Step 2 Click **View Log**. The log message window is displayed:

Figure 3-59 Sample Message Log



To save a log message for further analysis, perform the following steps:

Step 1 From the Messages window, select **Edit**, **Select All** (or **CTRL + A**).

Step 2 Select **Edit**, **Copy** (or **CTRL + C**).

Step 3 Open a text editing package, such as Notepad.

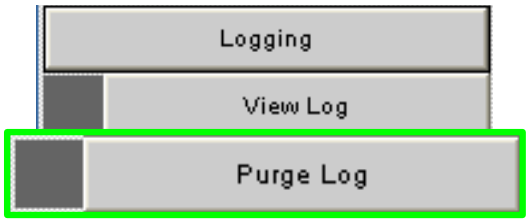
Step 4 Select **Edit**, **Paste** (or **CTRL + V**).

Step 5 Save as a plain text (.txt) file.

Purging the Log

The Purge Log button purges the RAM, clearing the log file(s).

Figure 3-60 Purge Log Button

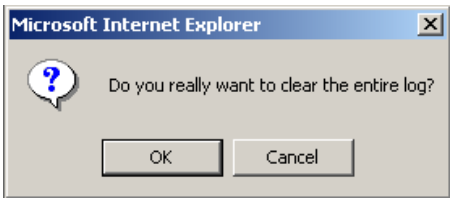


To purge the log:

Step 1 From the menu, click **Logging**.

Step 2 Click **Purge Log**. The Purge Log confirmation window is displayed

Figure 3-61 Purge Log Confirmation Window



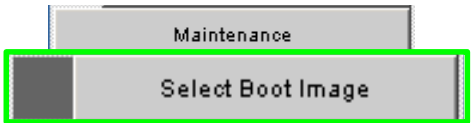
Step 3 Click **OK**.

Step 4 The message log file is now purged.

Select Boot Image

The Select Boot Image button allows the user to choose an alternative boot image for the SFS 7012. To select a boot image:

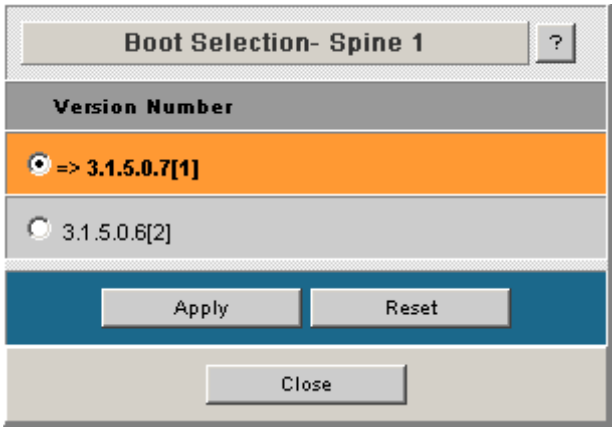
Figure 3-62 Select Boot Image Button



Step 1 From the menu, select **Maintenance**.

Step 2 Click **Select Boot Image**. The Boot Image Selection screen is displayed:

Figure 3-63 Boot Image Selection Screen



To choose a new boot image:

Step 1 Click on the radio button of the new boot image.

Step 2 Click **Apply**.

License Keys; Key Administration

The **License Key** submenu allows the user to activate and deactivate feature functionality that is sold as an add-on to the SFS 7012.

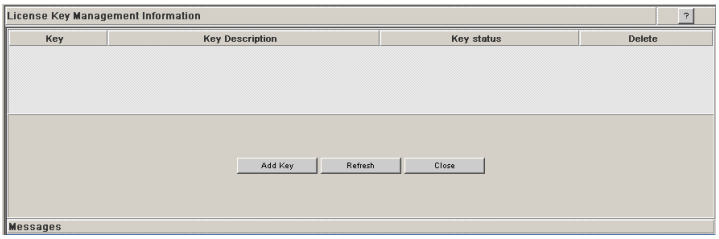
Adding a New License Key

Step 1 Click **License Keys**. The **Key Administration** button is displayed:

Figure 3-64 License Key Submenu

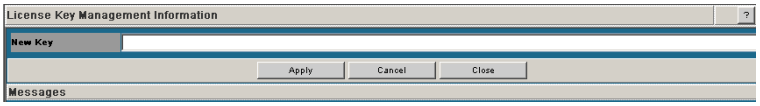
Step 2 Click **Key Administration**. The **Key Management** window is displayed:

Figure 3-65 Key Management Window



Step 3 To add a new license key, click the **Add Key** button. The **License Key Management Information** window is displayed:

Figure 3-66 License Key Management Information Window



Step 4 Enter the license key information in the **New Key** text box, and click **Apply**.

Note The license key number should be part of the paperwork shipped with the product. If the feature functionality is purchased at a later date, the license key number will be provided via e-mail.

Deleting a License Key

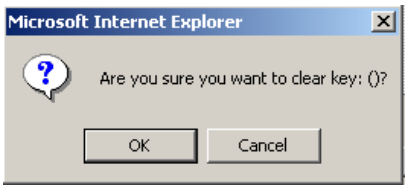
Step 1 Click on the **License Keys** submenu.

Figure 3-67 License Key Submenu

Step 2 Click on **Key Administration**. The **Key Management** window is displayed.

Step 3 To delete a license key, click the **Delete** button. The system prompts with the following:

Figure 3-68 License Key Delete Prompt



Step 4 Click **OK** to delete.

Technical Specifications

Table A-1 SFS 7012 Technical Specifications

Switch Physical Dimensions	• 7U high (24.5”) • 19" rack mount (17.32" wide) • 25 3/4" deep (without cables)
Weight	• 100 lb. (including power supplies)
Cooling	• Air cooled with 4 hot plug fan trays • Two fans per tray, 60mm, 12VDC • Front-to-back airflow • Active thermal performance monitoring switch board via IBML links
Environmental	• Operating temperature: 50° - 104°F (5° - 40°C) at sea level, altitude derating 2°F (1°C) per 300m to 2,000m • Non-operating temperature: -35°C to 65°C • Relative humidity (non-condensing): operating 5% – 85%; non-operating 5% – 90% • Self-contained thermal management
Power Supply	• Up to six redundant, hot plug supplies • 90/264 VAC operation • 350W max power per supply • Input: • 90–264V AC, 47–63Hz, 1 Phase, 6.5A max current at 115VAC • Inrush Current: • 15A @ 115VAC (25°C cold start) 30A @ 230VAC (25°C cold start) • Power Factor 0.95 • Two IEC 320 connectors for independent AC inputs
Certification Marks	• UL, CSA, CE, VCCI, GS, FCC Class B, IC Class B, ICES - 003

Command Line Interface

This appendix includes the following information:

- Commands and Functional Groups, page B-86
- Accessing the CLI, page B-87
- Groups and Commands, page B-88

Overview

This section details the usage of the Command Line Interface (CLI) feature for the Cisco SFS 7012™. The CLI allows the user to perform remote configuration and management tasks, which in many respects mirrors the functionality of the Chassis Viewer GUI.

The CLI is accessed via a terminal attached to the SFS 7012 spine module(s) RS232 port(s) or via the OOB management port using Telnet and secure shell (SSH). For a standalone SFS 7012, the user would Telnet to the unit's IP address(es). Once connected, the CLI works as any telnet session does.

To access the CLI, a login and password is required. There are two user modes, operator and administrator with the following access privileges:

Operator:

- Read only access.

Administrator:

- Read and write Access.
- Reboot access.
- Can change operator and administrator passwords.
- Can disable user login and passwords. This would allow all users administrator-level access without the need for a user name or password.
- Can view all current user sessions
- Can access all of the commands executed from any open operator session.
- Can log out any open user sessions

Can send messages to the open user sessions

The CLI allows multiple users to be logged in simultaneously. However, some commands will be locked to a user(s) if another user is executing the same command.

The CLI is also accessible through the RS232 serial port of the SFS 7012. Accessing the CLI through the serial port never requires a login and password and defaults to administrator privileges. Providing access through the serial port means that users will always have access to the SFS 7012, even if Telnet and SSH are not functioning.

Commands and Functional Groups

The list of available commands can be accessed by typing **`list`**. To keep the list short, the commands are grouped into functional groups, which are:

General:

General administrative commands

Deprecated:

Commands that have been deprecated.

Note The Deprecated group contains CLI commands that been replaced or are to be removed. Please use the new command where appropriate.

Chassis:

Provides commands for configuring and managing chassis-level functionality. This includes commands for changing the SFS 7012 IP address, and displaying fan tray, power supply, and FRU information.

Network:

General network commands.

Firmware:

Provides commands for updating the firmware via a File Transfer Protocol (FTP) server or Secure Copy Protocol (SCP) (if using SSH to access the SFS 7012). The SFS 7012 has the ability to store the location of the firmware files for future upgrades. Additionally, the Firmware functional group includes commands for viewing the current firmware revisions and for changing the boot image.

Log:

Provides commands for viewing log files as well as configuring logging parameters. This includes commands for changing the SFS 7012 IP address, and displaying fan tray, power supply, and FRU information.

KeyManagement:

Provides commands for adding, removing and displaying license keys on the SFS 7012.

IbSwitchInfo:

Provides commands for displaying InfiniBand (IB) statistics for all IB ports on the SFS 7012.

TimeManagement:

Provides commands for retrieving and setting the current system time, as well as commands for setting the time zone and daylight saving time parameters.

Snmp:

Provides commands for configuring SNMP trap destinations and security parameters required to access the SFS 7012 from an SNMP manager.

Capture:

Provides commands for capturing switch-specific information for the purposes of analysis and debugging.

To list commands within a functional group, simply type in the functional group name. For example, to list all of the firmware commands, type **Firmware**. The system would display the following:

```
-> Firmware
fwUpdateSlot        Update units firmware
fwUpdateChassis     Update units firmware
fwListFiles         List the contents of the firmware ramdisk
fwShowUpdateParams  Display firmware default update parameters
fwSetUpdateParams   Configure firmware default update parameters
showCapability      Display the capabilities/features
fwVersion           Display Firmware revisions
bootQuery           Query boot image information
bootSelect          Change boot selection
```

Online Help

The online help for the CLI provides, for each command, all necessary information to successfully execute the command. For example, typing **help fwShowUpdateParams** displays the following information:

```
NAME
fwShowUpdateParams
SYNOPSIS
fwShowUpdateParams
DESCRIPTION
Display the default update firmware settings.
OPTIONS
None.
```

Keyboard Shortcuts

- The CLI keeps a history of recently executed commands. This history is available via the **Up** and **Down** arrow keys.
- Users may edit the current command with the **Left** and **Right** arrow keys.
- Tab completion: pressing the **Tab** key after typing at least one character either completes a command or lists all the available commands that begin with the characters already typed.

Accessing the CLI

Note The CLI can be accessed via Telnet, SSH, or through the SFS 7012 RS232 serial port. The following instructions use Telnet.

Step 1 Telnet to the IP address of the SFS 7012 (the default IP address is 192.168.100.9) with the following command:

```
open <IP ADDRESS>
```

Step 2 The system prompts for a username. The CLI has the following default user names:

- Operator access: **operator**

- Administrator access: **admin**

Type the appropriate username and press **Enter**.

Step 3 The system prompts for a password. The CLI has the following default passwords:

- Operator access: **operpass**
- Administrator access: **adminpass**

Type the appropriate password and press **Enter**. The system responds with:

```
Welcome to the SFS 7012 CLI. Type 'list' for the list of commands.
```

Groups and Commands

The following section lists the CLI's functional groups along with the commands for each group. For more specific information for each functional group, the user would execute the **help <GROUP NAME>** command. For more specific command information, the user would execute the **help <COMMAND NAME>** command.

General

```
help
    Prints out help info for a specific command
list
    Lists all the valid commands
history
    Display command history
reboot
    Reboots the device
who
    Display all the active CLI sessions
killCliSession
    Terminate a CLI session
broadcast
    Write a message to all active CLI sessions
swapBsDel
    Toggle the key binding for the backspace character
setTermWidth
    Change the terminal width for formatting purposes
prompt
    Set the CLI prompt (global)
showLastRetCode
    Display the return code from the last command
rlogin
    Display the return code from the last SCP Firmware Push
rcmd
    Display the return code from the last SCP Firmware Push
resetCard
    Reboot a specific slot in the chassis
logout
    Exit the CLI
user
    Change user accounts
passwd
    Change user accounts password
loginMode
    Change the login authentication mode
showLastScpRetCode
    Display the return code from the last SCP Firmware Push
```

```
exit
    Exit the CLI
```

Deprecated

```
smDisplayLids
    Use smShowLids
smGetPriority
    Use smShowPriority
smDumpGroups
    Use smShowGroups
smDumpServices
    Use smShowServices
smDumpSubscriptions
    Use smShowSubscriptions
smDisplayMasterLMC
    Use smShowMasterLMC
smDisplaySmMasterLid
    Use smShowMasterLid
smDumpLidMap
    Use smShowLidMap
smDisplayMaxLid
    Use smShowMaxLid
smDisplaySMParms
    Use smShowSMParms
ismTune
```

Chassis

```
slotInfo
    Prints out chassis slot occupants
hwMonitor
    Monitor fans, power supplies, and port state
showIBNodeDesc
    Show the IB Node (SMA) Description (or the Default)
setIBNodeDesc
    Set the IB Node (SMA) Description
fruInfo
    Display field replaceable unit information
memShow
    Displays internal memory usage
chassisQuery
    Displays information about the line cards in a chassis
showInventory
    Displays a detailed list of all hardware within the chassis
```

Sample Output:

```
    MasterSpine1-> showInventory

    NAME: "Slot 2",  DESCR: "4X 12-Port Card"
    PID: 74-4316-02, VID: V02, SN: SST0639000C

    NAME: "Spine 1",  DESCR: "Fabric Module-MGR'D"
    PID: 74-4319-02, VID: V02, SN: SST06390002

    NAME: "Chassis",  DESCR: "144 Port IB Server Switch"
    PID: 74-4314-02, VID: V02, SN: SST06390001

    NAME: "Power Supply 1",  DESCR: "SFS 7012/7024 Power Supply"
    PID: 74-4321-01, VID: N/A, SN: N/A

    NAME: "Power Supply 2",  DESCR: "SFS 7012/7024 Power Supply"
    PID: 74-4321-01, VID: N/A, SN: N/A

    NAME: "Fan Tray 1",  DESCR: "SFS 7012/7024 Fan Tray"
    PID: 74-4323-01, VID: N/A, SN: N/A

    NAME: "Fan Tray 2",  DESCR: "SFS 7012/7024 Fan Tray"
    PID: 74-4323-01, VID: N/A, SN: N/A

    NAME: "Fan Tray 3",  DESCR: "SFS 7012/7024 Fan Tray"
    PID: 74-4323-01, VID: N/A, SN: N/A

    NAME: "Fan Tray 4",  DESCR: "SFS 7012/7024 Fan Tray"
    PID: 74-4323-01, VID: N/A, SN: N/A

    Total devices found: 9
```

Network

```
ifShow
    Displays the interface statistics for the OOB management port
routeShow
    Displays the interface routes for the OOB management port
ping
    Send Ping packets to a specified IP address
showChassisIpAddr
    Displays the chassis IP address
setChassisIpAddr
    Change the chassis IP address
showDefaultRoute
    Displays the default gateway IP address
setDefaultRoute
    Change the default gateway IP address
arpShow
    Displays the link level adress resolution protocol (ARP) table
hostShow
    Displays the host name table
```

Firmware

```
fwUpdateSlot
    Update units firmware
fwUpdateChassis
    Update units firmware
fwListFiles
    Lists the contents of the firmware RAM disk
fwShowUpdateParams
    Display firmware default update parameters
fwSetUpdateParams
    Configure firmware default update parameters
showCapability
    Display the capabilities/features
fwVersion
    Display Firmware revisions
bootQuery
    Query boot image information
bootSelect
    Change boot selection
```

Log

```
logShow
    Display the Log file
logClear
    Clear the Log file
logConfigure
    Configure the log settings
```

Note When configuring log devices (option 1), do not change settings for the following devices:

BriefRam: Changes will have no effect.

Console: This device changes log messages that are displayed on the RS232 port.

Trap: Modifying traps may have adverse effects if the device is configured to send traps to a SNMP management station. By default it is configured to send traps. Enabling additional log levels will have no effect, but disabling log levels will prohibit traps from being sent.

These devices are for internal use only.

```
logSaveAsDefault
    Save current log level settings as the defaults
logResetToDefaults
    Restore the log default settings
logSyslogConfig
    Configure the syslog host address
logShowConfig
    Display the current log configuration
```

KeyManagement

```
showKeys
    Display the list of installed license keys
addKey
    Install a license key
removeKey
    Remove a license key
```

IbSwitchInfo

```
ismPortStats
    Show statistics for all ports
ismPortCounters
    Show Port Counters
ismLinearFwdb
    Show/set Linear Forwarding Database for switch
ismMultiFwdb
    Show Multicast Forwarding Database for switch
ismAutoClearConf
    Configure the port statistics counter auto-clear options
ismPortSet12x
    View/Set/Unset port link width to 12X for specific port[s]
ismChassisSet12x
    View/Set/Unset chassis link width to 12X (including external ports)
ismChassisSetSpeed
    View/Set port link speeds for entire chassis to 2.5, 5.0 or AutoNegotiate (including
    external ports)
ismPortEnable
    Adjust port settings
ismChassisSetEnable
    View/Enable/Disable ports for entire chassis
ismPortDisable
    Disables the named port
ismPortSetSpeed
    Sets a named port's speed to 2.5Gbs, 5.0Gbs, or auto-negotiate
ismIslSet12x
    View/Set/Unset chassis link width to 12X (except external ports)
ismIslSetSpeed
    View/Set port link speeds to 2.5, 5.0 or AutoNegotiate (except external ports)
ismShowPStatThresh
    Display the port statistics thresholds
ismSetPStatThresh
    Modify the port statistics thresholds
```

TimeManagement

```
time
    Configure the time on the device
timeZoneConf
    Configure the time zone setting
timeDSTConf
    Configure the daylight savings time settings
```

SNMP

```
snmpCommunityConf
    Configure the SNMP community strings
snmpTargetAddr
    Configure the SNMP trap targets
snmpTargetParams
    Access the snmpTargetParamsTable
snmpNotifyProfile
    Access the snmpNotifyFilterProfileTable
snmpNotifyFilter
    Access the snmpNotifyFilterTable
snmpNotify
    Access the snmpNotifyTable
```

Capture

```
capture
    A combination of all capture commands that follow
captureFw
    Capture firmware information
captureSm
    Capture subnet manager information
captureIsm
    Capture IB switch information
captureChassis
    Capture chassis information
captureLog
    Capture log information
captureMisc
    Capture miscellaneous information. This includes information such as license keys,
    memory test, time zone, and time Daylight Saving Time (DST)
captureSnmp
    Capture SNMP information
captureShell
    Capture shell command information
```

Troubleshooting

This appendix describes how to troubleshoot the Cisco SFS 7012™, and it includes the following information:

- Hardware Checks, page C-95
- Troubleshooting Scenarios, page C-97

Hardware Checks

Switch

Problem	Fix
The Switch has no power	Ensure that the power cord(s) is attached to the Switch and the power outlet. Ensure that the power supply(s) is seated properly.

Power Supply

Problem	Fix
DC OK LED is off	Indicates DC power failure or no DC power is present
AC OK LED is off	Indicates AC power failure or no AC power is present

Fan

Problem	Fix
Red LED is lit	Call Tech Support
Fan not running	Ensure fan is seated properly. If fan continues to be inoperable, call Tech Support

OOB Ethernet RJ45 Port

Problem	Fix
The SFS 7012 Ethernet Port(s) have a RJ45 Cable with a Noise Problem: This problem would occur if there is a RJ45 cable that has poor shielding or contact of pins.	Ensure that the cable is a straight-through Cat 5 cable (not a crossover cable). If using a straight-through cable and still experiencing this problem: Test with a known good cable.
Absence of Ethernet link and/or intermittent Ethernet connectivity.	Ensure that the Ethernet cable is Cat 5E or Cat 6 certified.

SFS 7012 Leaf Module IB Ports

Problem	Fix
No LED	LED may be bad if IB Link (A and B) LEDs are lit, and the ATTN and/or STAT is not.
Bad IB Cable	If the QUAL LED is not lit: Test with a known good IB cable.

Troubleshooting Scenarios

InfiniBand

This section documents common problems seen with the SFS 7012 switch.

Invalid IP Address entered for SWC via Console Port

Symptoms

Cannot access the Chassis Viewer browser window. The browser window times out and Chassis Viewer will not come up.

Resolution / Workaround

Invalid IP Address entered for switch card via the console port. Make sure configuration is using a valid IP address for the Switch (make sure initial configuration for switch is correct using the console port during the boot sequence).

Bad IB Cable

Symptoms

When viewing the IB fabric with a subnet manager viewer, no nodes will be seen, or only the nodes that have a good IB connection will be seen.

Resolution / Workaround

Possibly a bad IB cable(s). Ensure that there is a Blue LED illuminated on the leaf module IB ports of the SFS 7012 switch. Make sure that all devices (nodes) can be seen in the subnet manager window.

Improperly Seated IB Cable

Symptoms

When viewing the Subnet Manager no nodes will be seen, or only the nodes that have a good IB connection will be seen.

Resolution / Workaround

Possibly an improperly seated IB cable(s). Ensure that there is a Blue LED illuminated on the switch. Make sure that all devices (nodes) can be seen in your Subnet Manager window.